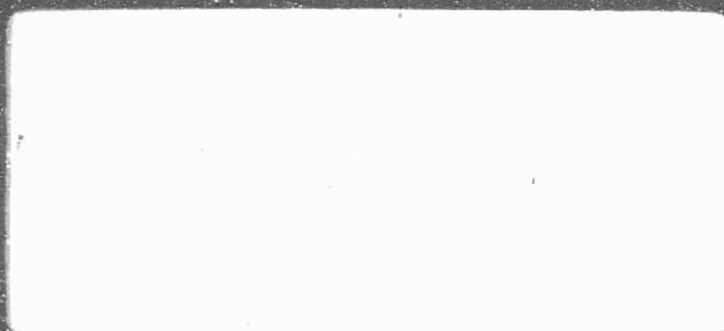


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(NASA-CR-170877) ACTIV LOW L/D PRELIMINARY
AERHEATING DESIGN ENVIRONMENT Final Report
(Remtech, Inc., Huntsville, Ala.) 104 p
HC A06/MF A01

N83-36(97

CSCI 22B

Unclas

63/18 44082

REMTECH inc.

Huntsville, Alabama

Lee Tate / ED33

AOTV LOW L/D PRELIMINARY
AEROHEATING DESIGN ENVIRONMENT



August 1983

by

Carl D. Engel

Prepared under Contract NAS8-34590
for
Marshall Space Flight Center
Huntsville, Alabama
35812

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FOREWORD

This is the final report presenting work which was conducted for Marshall Space Flight Center (MSFC) in response to requirements of Contract NAS8-34590. The work presented was performed at REMTECH's Huntsville office and is entitled "AOTV Low L/D Preliminary Aeroheating Design Environment".

The NASA technical coordination for this study was provided by Messrs. Lee D. Foster and Peter R. Sulyma of the Thermal Environment Branch of the Systems Dynamics Laboratory.

NOMENCLATURE

D	Diameter
h	Heat transfer coefficient
P	Pressure
q	Heating rate
r	Local radius
R	Total body radius
T	Temperature
X	Axial distance from brake face
α	Angle of attack
Γ	Radiative cooling parameter
ϵ	Emissivity
$\bar{\rho}$	Ratio of freestream over post shock density
δ	Shock stand-off distance

SUBSCRIPTS

r	Radiative
o	Brake center
P	Payload
ref	Per Fay and Reddell Hemisphere of brake diameter
W	Wall

INTRODUCTION

Aeroassisted orbital transfer vehicles (AOTV) could be the key to significant reductions in fuel and increases in payload for orbit changing vehicles. The reusable aeroassisted orbital transfer vehicle substitutes aerobraking in the upper atmosphere for conventional retro-rocket burns to reduce its speed as it returns from high orbit to low Earth orbit.

To achieve geosynchronous orbit, an AOTV must provide an additional 14,000 fps. to the 25,000 fps. velocity attained by the Space Shuttle. To return to low Earth orbit, an additional 14,000 fps. increment from aerobraking or the propulsion system is required. In order to make large plane changes, it is desirable to move from geosynchronous orbit to an orbit of 5 times as high to make the plane change. This condition provides the most severe aerothermal environment during the high altitude aerobraking maneuver.

The current work focuses on the aerothermal environment to a configuration with a brake face which exhibits a low lift-to-drag ratio (L/D) of below 0.75. The 5 times geosynchronous (5 x Geo) orbit entry was selected as the design trajectory. The available data base and math model is discussed. The resulting preliminary design environment is documented. Recommendations as to how the design environment may be improved through technological advances are given.

SECTION 2.0

AOTV DATA BASE

An initial wind tunnel test was conducted to obtain heat transfer data of the lifting brake concept of the AOTV. This data is presented in Ref. 1 and 2 where Ref. 2 contains the entire data base. The geometry of this concept is shown in Fig. 1. The brake face is deployable and consists of a rib structure covered by fabric. The payload is cylindrical in shape.

Phase change paint was used to obtain the brake face data of Ref. 2. The peak heating rate trends with angle of attack are shown in Fig. 2 and 3. The maximum heating rate occurs at the location on the edge where the shape changes. The trajectory used for design is discussed in detail in Section 3.0. This trajectory is for a constant angle of attack of 15 degrees. Consequently, the data examined herein is primarily for the 15 degree angle of attack situation.

The heating distribution to the windward line of the brake face is shown in Fig. 4. In order to obtain the complete distribution on the face, both paint data and thermocouple data were used. The paint data line shown in Fig. 4 is the faired cross plot line from Fig. 3. In order to obtain the heating distribution around the edge of the vehicle, the two-dimensional model data was used. The 2-D data is plotted in the lower half of Fig. 4 where the 2-D distribution was translated to match the axisymmetric paint data line. The translation is a factor of 1.46 which is in the right range of 2-D to axisymmetric factors (i. e. between $\sqrt{2}$ and $\sqrt{3}$).

The heating distribution to the windward line of the payload is shown in Fig. 5. The paint and thermocouple data agree rather well for the cylindrical

payload geometry. The coordinate X begins at the front face of the brake and extends through the axis of symmetry of the payload. The high heating on the payload is caused by shear layer reattachment. The maximum heating amplification is a strong function of angle of attack as seen in Fig. 6. Any practical angle of attack will have a significant reattachment heating amplification.

SECTION 3

CALCULATION PROCEDURE

3.1 Trajectory

The heating to the AOTV is quite trajectory sensitive. The ceramic cloth radiative structures proposed for the AOTV are sensitive to heating rate rather than heating load. Consequently, the deeper the dive into the atmosphere, the more severe the design requirements.

In order to establish a design trajectory, the highest entry heating conditions were sought. It appears, at this time, that the return from five times geosynchronous orbit is the most severe aerothermodynamically. The design trajectory altitude and velocity profiles are shown in Figs. 7a and 7b. This trajectory is for the configuration shown in Fig. 1 flown at an angle of attack of 15 degrees. The standard 1962 atmosphere was used to generate the trajectory and therefore, it was used to calculate the heating. A tabular listing of the trajectory is contained in the environment tables given in Appendix B.

3.2 Methodology

All of the measured heating data had been nondimensionalized by the Fay and Riddell stagnation point heat transfer coefficient for a sphere with the same radius as the brake. Thus, for flight application, the convective heating values were determined by the Fay and Riddell value for the full scale brake radius times the local heating ratio determined from test conditions. The assumption made is that the method of Fay and Riddell scales the tunnel data from tunnel to flight. This appears to be a reasonable approximation for a preliminary

design since the peak heating occurs in the boundary layer regime. The brake face as a radiative cooled structure is peak rate sensitive rather than load dependent. The load would be influenced by rarefied flow effects which were not accounted for in this design environment.

The heating ratios from tunnel conditions were determined for the brake face from Fig. 4 and the payload from Fig. 5. These ratios are tabulated in Table 1 for the design body points. The body point nomenclature developed for the lifting brake AOTV is as follows:

Brake face:

xxxyy

where

xxx = location in degrees

yy = $r/R \times 100$

Payload:

xxxyy

where

xxx = 500+ location in degrees

yy = $x/D_p \times 10$

The radiative heating rates are based on the radiative heating code, RADCOR, developed by Engel (Ref. 3). The computer program RADCOR can be used to compute radiative heating rates at the stagnation line. Heating rate calculations are based on a radiative cooling parameter correlation which is used in conjunction with an isothermal slab radiation calculation made in the program. The isothermal radiation calculation is made for post shock thermodynamic and species levels. The heating at the point in question is only dependent on the stand-off distance and free stream conditions. This program provides the capability of rapidly estimating radiative heating rates at the stagnation line.

The basic assumptions of the calculation are:

1. The shock layer can be approximated locally as an infinite plane slab.
2. The shock stand-off-distance is computed using

$$\delta/R = 1.03/(1/\beta - 1)^{1/2} \text{ for a flat face}$$
3. Line and continuum radiation of species O and N are included.
4. Continuum radiation of species O_2 and N_2 are included.
5. The surface radiative flux can be computed from the isothermal flux using a radiative cooling parameter correlation.

The principle option of the program computes the surface radiative heating for an air atmosphere using the following computation sequence. First, the Rankine-Hugoniot equations are solved using the air thermodynamic properties of Hansen (Ref. 4). Second, the shock stand-off-distance is computed. Third, using the stand-off-distance and post shock species composition from the solution of the Rankine-Hugoniot equations, the isothermal radiative flux is computed. Fourth, the radiative cooling parameter, Γ , and surface radiative heating, q_r , are computed using the following relations from Ref. 5.

$$\Gamma = \frac{(q_r)_{\text{isothermal}}}{1/2 \rho_{\infty} U_{\infty}^3} \quad .04 < \Gamma < 1.0$$

$$q_r = (0.2 - 0.295 \log_{10} \Gamma) (q_r)_{\text{isothermal}}$$

This correlation was compared with shock tube radiative data in Ref. 5.

One of the primary assumptions used in the reference shock layer radiation calculations is the stand-off-distance. The relationship used is for a flat faced cylinder. This is most likely conservative relative to the

stand-off-distance for the brake at angle of attack. Shadowgraph or schlieren data for the shock shape are required to improve this assumption.

In order to obtain the radiative distribution on the front face of the brake, the following approximations were made. Since the shock layer is a finite slab of radiating gas rather than a semiinfinite slab, the radiative flux was reduced linearly from center to edge of the brake. The radiative flux is proportional to the shock layer pressure level. These two effects were combined to obtain the distribution relation

$$q_r/q_{r0} = (P/P_0)(1 - 0.5 r/K)$$

By using the experimental pressure distribution for $\alpha = 15$ degrees, the radiative flux ratio given in Table 1 were determined.

SECTION 4

DESIGN ENVIRONMENT

The convective heating was calculated as a factor times the heating for a sphere of 25 feet radius. A plot of this reference heating rate value along with equilibrium radiation temperature is given in Fig. 8. The peak rate is 21.5 BTU/sft-sec at 93 seconds after entry. In a similar way, the radiative heating to the brake face is based on a reference calculation. This reference is for the center of the brake face and is plotted in Fig. 9. This 5 x Geo entry produces peak reference radiative rates of 15.8 Btu/sft-sec whereas 1 x Geo entry trajectories produced a peak of 3.2 Btu/sft-sec. This differential may be very significant in establishing a viable design. The reference radiative heating results are given in Appendix A.

Tabulated values of the brake face environment are given Appendix B. The maximum heating rate distribution and corresponding equilibrium wall temperature are shown in Fig. 10. The maximum value on the brake face occurs at $r/R = 0.91$ which is body point 91. The heating rate history and corresponding equilibrium wall temperature are shown in Fig. 11. The peak equilibrium wall temperature of 2910°F is quite close to the short term use temperature of 3000°F for Nextel 312 proposed by GDC (Ref. 6). The extended use temperature for Nextel 312 is 2600°F . The body point 91 exceeds 2600°F for 60 seconds.

Tabulated values of the payload environment is given in Appendix C. The environment is given for the most windward axial line of the payload. The axial peak heating rate and load distribution is shown in Fig. 12. Both the rate and load are significant and will require a thermal protection system. The maximum

occurs at $X/D_p = 2.4$. The load assumes no roll of the vehicle during the atmospheric maneuver. A rolling motion could significantly lower the load to any given location and thus decrease TPS requirements.

Table 1

WINDWARD LINE HEATING FACTORS AT $\alpha = 15$

Brake Face

r/R	B.P.	h/h_{ref}	q_r/q_{r0}
0.00	0	0.62	1.00
0.20	20	0.65	0.90
0.40	40	0.72	0.80
0.60	60	0.80	0.70
0.80	80	1.00	0.59
0.85	85	1.16	0.55
0.90	90	1.57	0.51
0.91	91	1.80	0.49
0.97	97	1.75	0.30
0.99	99	1.62	0.12
1.00	100	1.30	0.052

Payload

X/D_p	B.P.	h/h_{ref}
0.70	50007	0.032
1.00	50010	0.032
1.30	50013	0.032
1.50	50015	0.050
1.70	50017	0.075
2.10	50021	0.225
2.40	50024	0.315
3.00	50030	0.250
3.50	50035	0.200

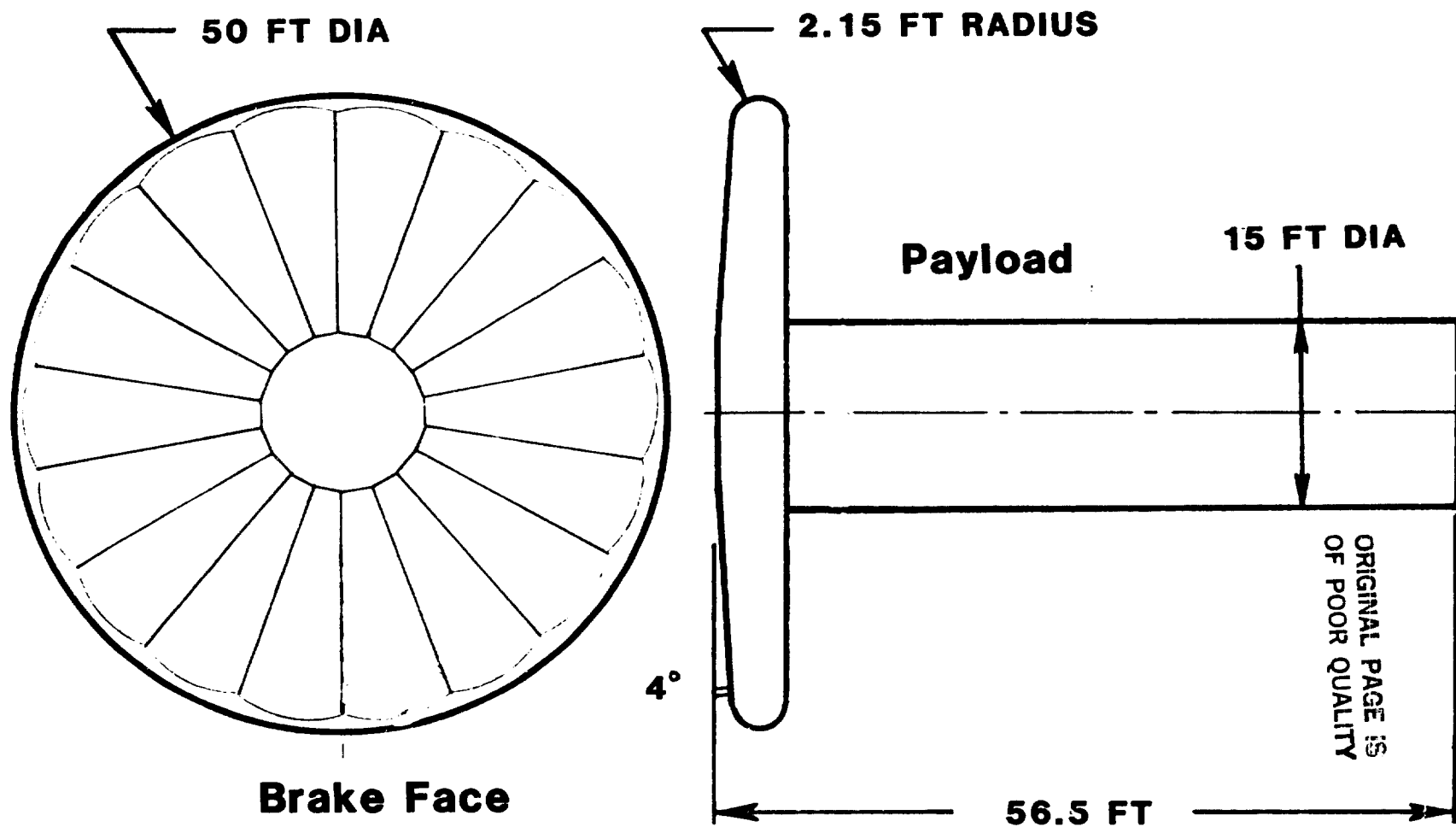


Fig. 1 Generic Lifting Brake Geometry

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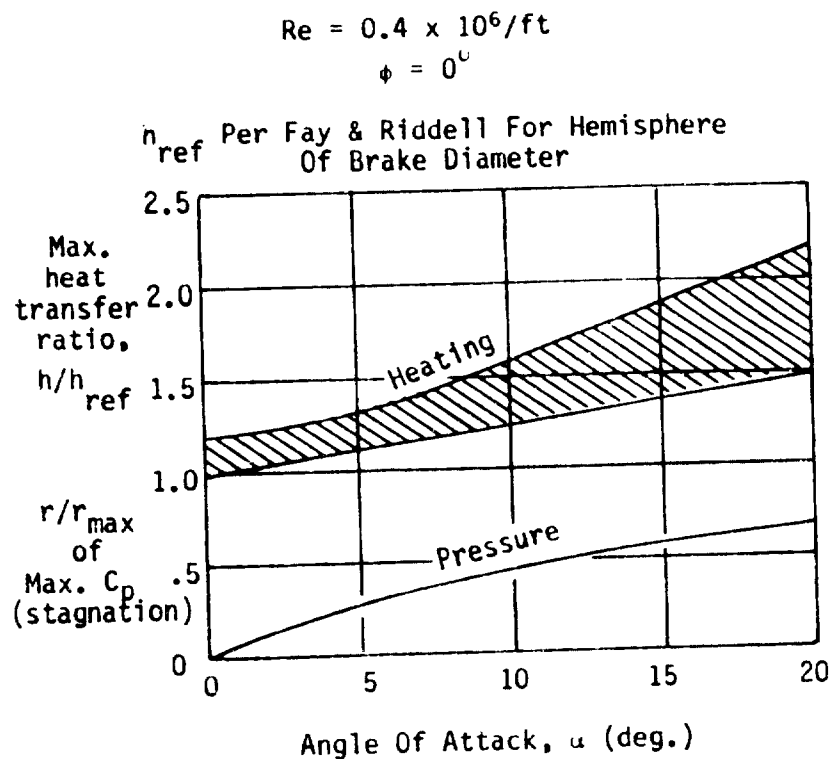


Fig. 2 Brake Face Maximum Heating And Stagnation Location As A Function Of Angle Of Attack

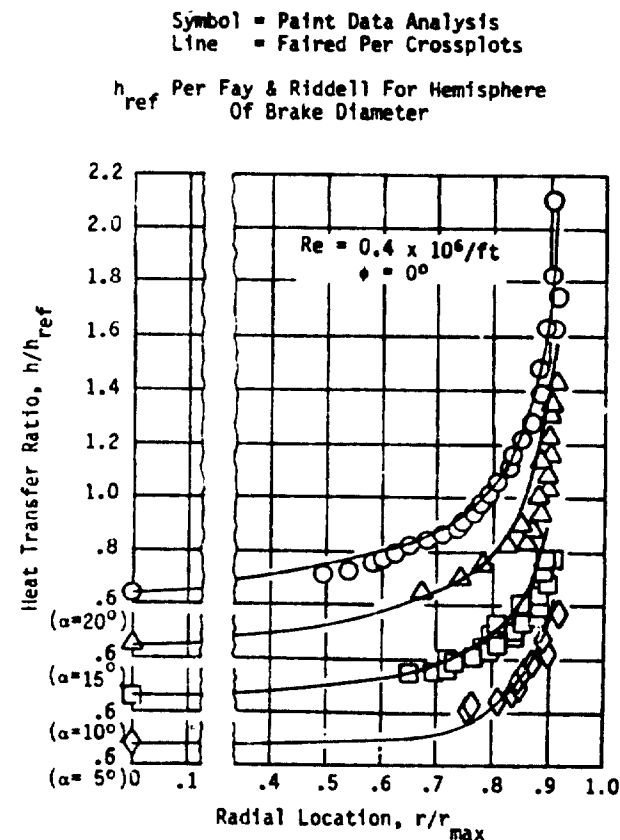


Fig. 3 Radial Variation Of Heat Transfer On Brake Face

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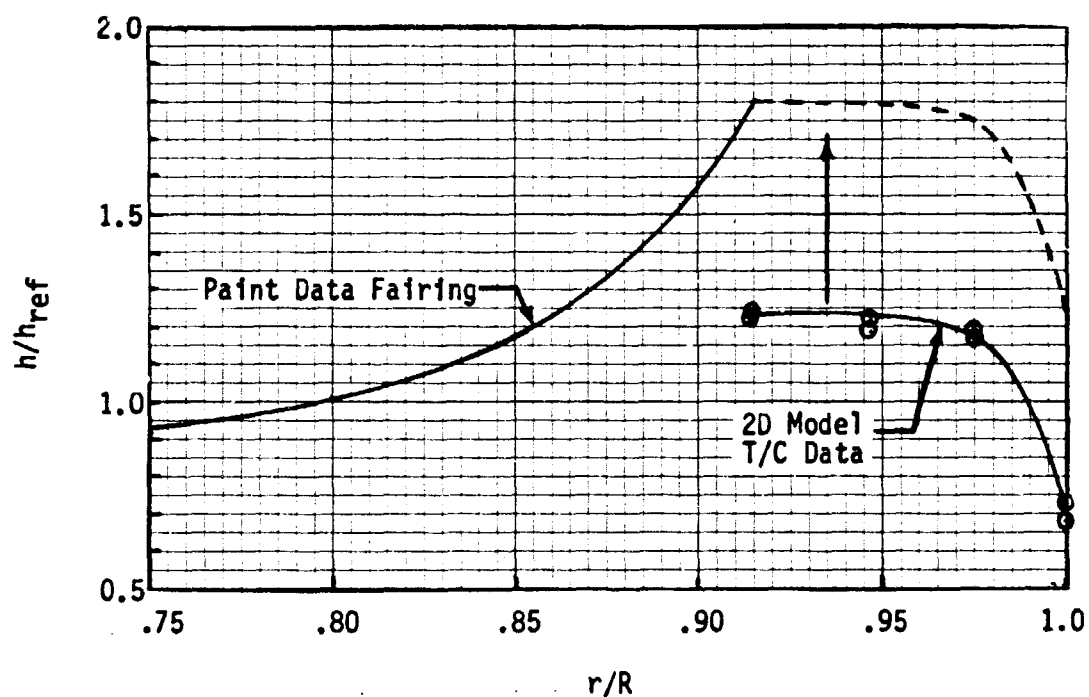
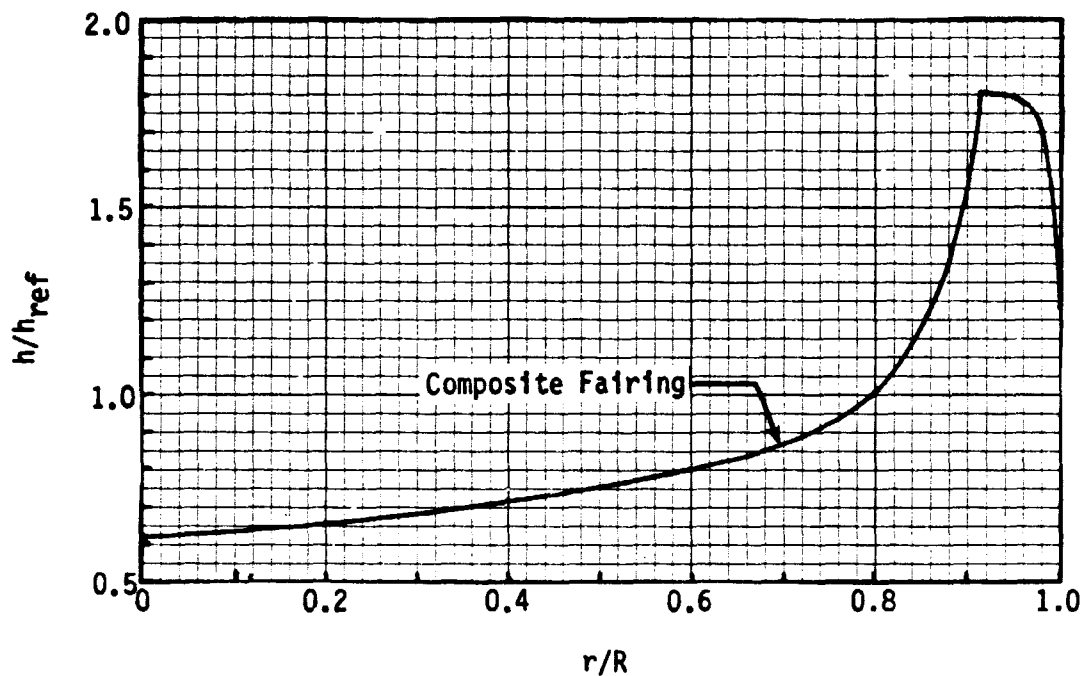


Fig. 4 Windward Line Brake Face Heating Distribution From Paint and Thermocouple Data ($\alpha = 15$ degrees)

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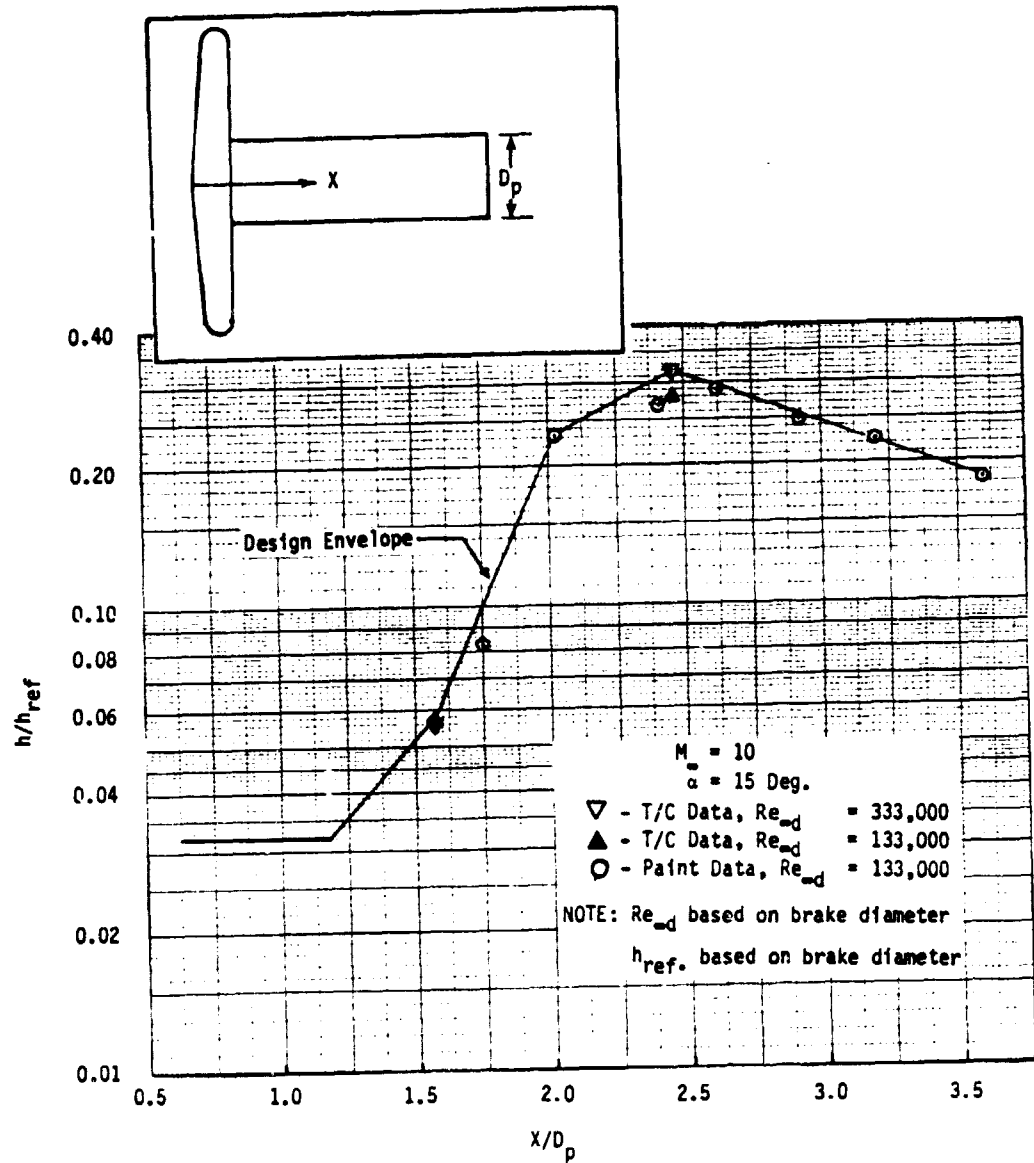


Fig. 5 AOTV Payload Windward Line Heating Ratio Distribution at $\alpha = 15$

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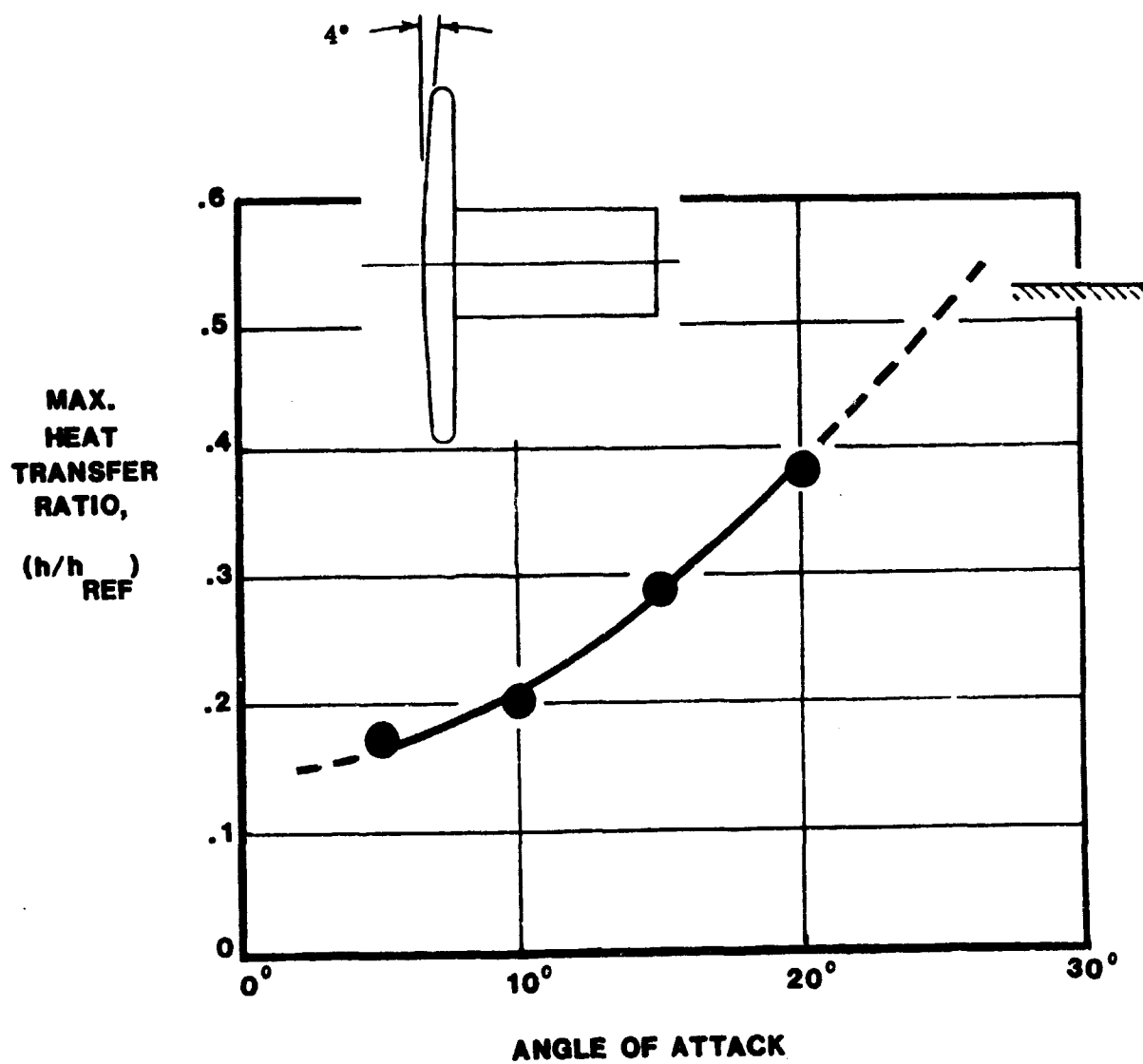


Fig. 6 Payload Maximum Heat Transfer Ratio

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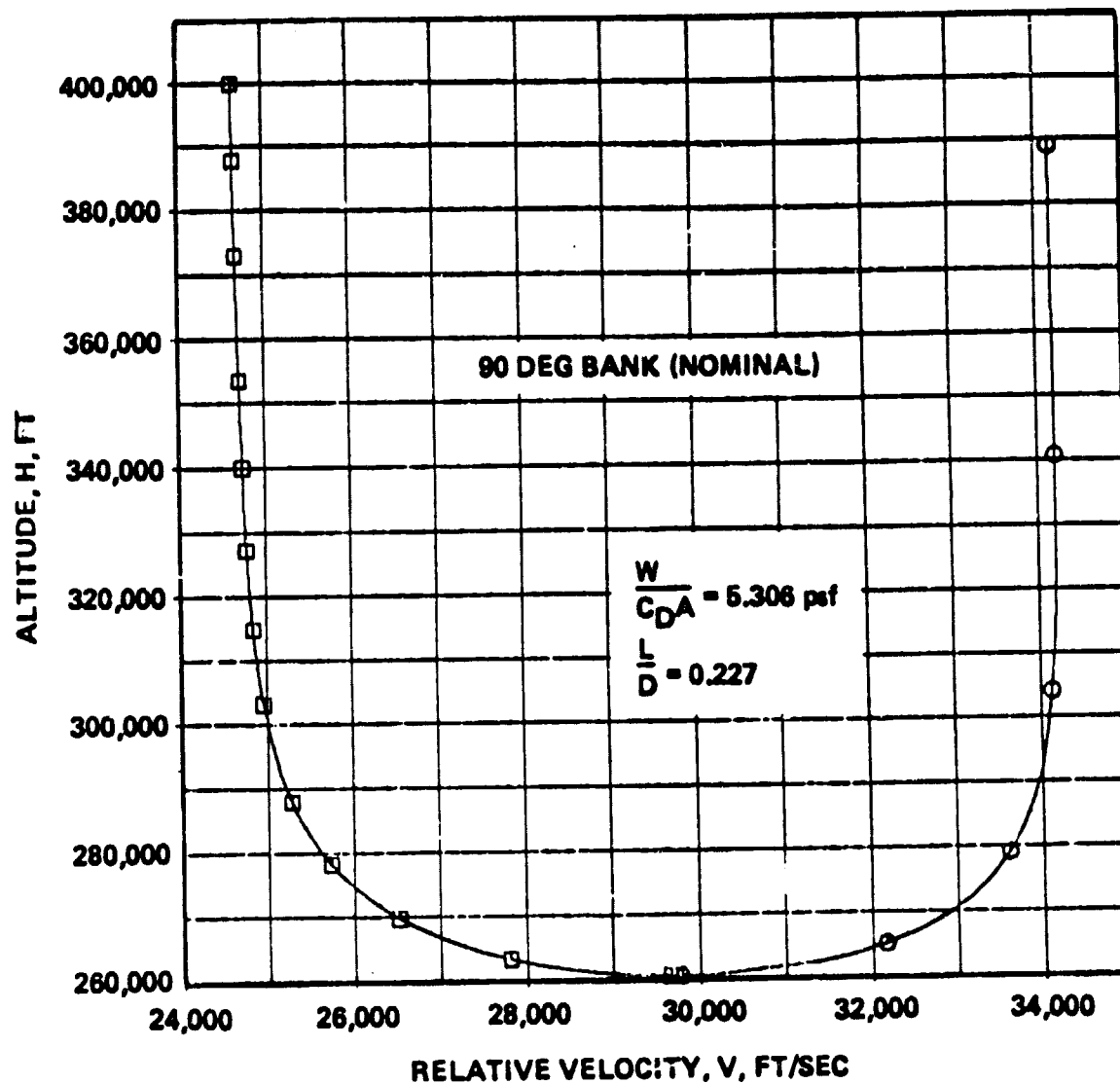
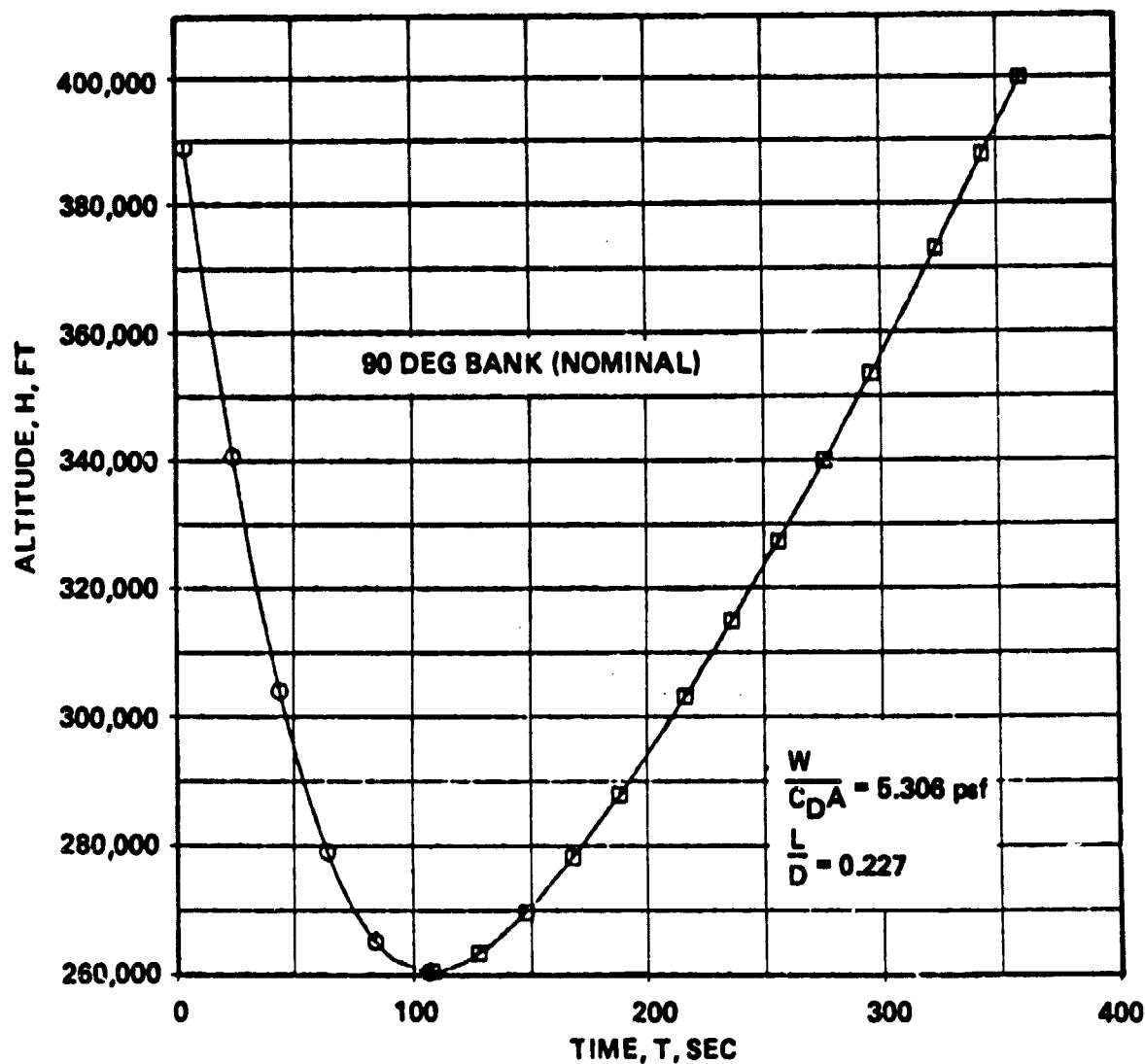


Fig. 7a Boeing Lifting Brake Trajectory ($\alpha = 15$ Deg. Standard 62 Atmosphere)

RETURN FROM 5 X GEO LIFTING BRAKE
BANK = 90.0Fig. 7b Boeing Lifting Brake Trajectory ($\alpha = 15$ Deg., Standard 62 Atmosphere)

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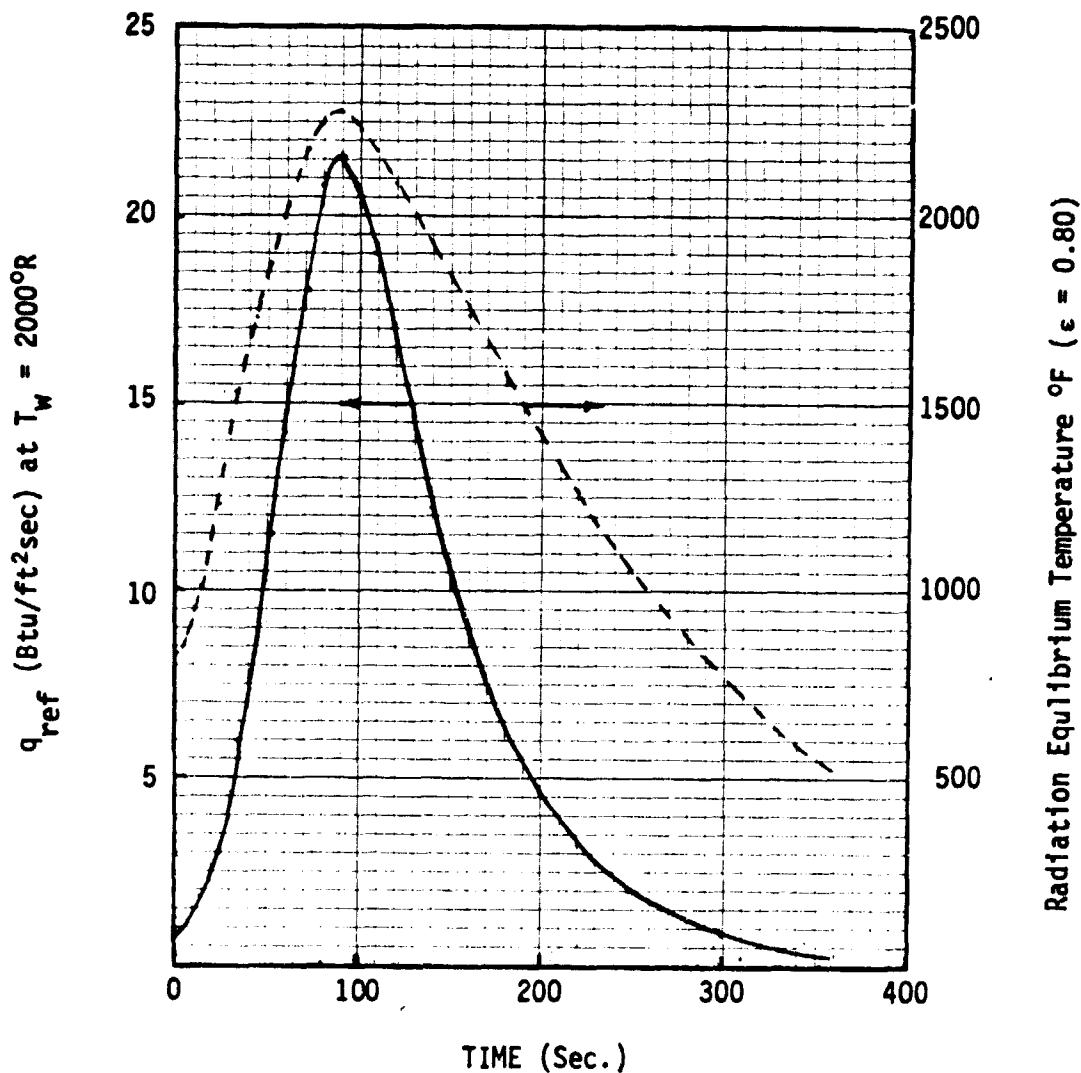


Fig. 8 Reference Sphere (R=25ft.) Heating Rate and Equilibrium Wall Temperature for Boeing Lifting Brake Trajectory (5 x Geo).

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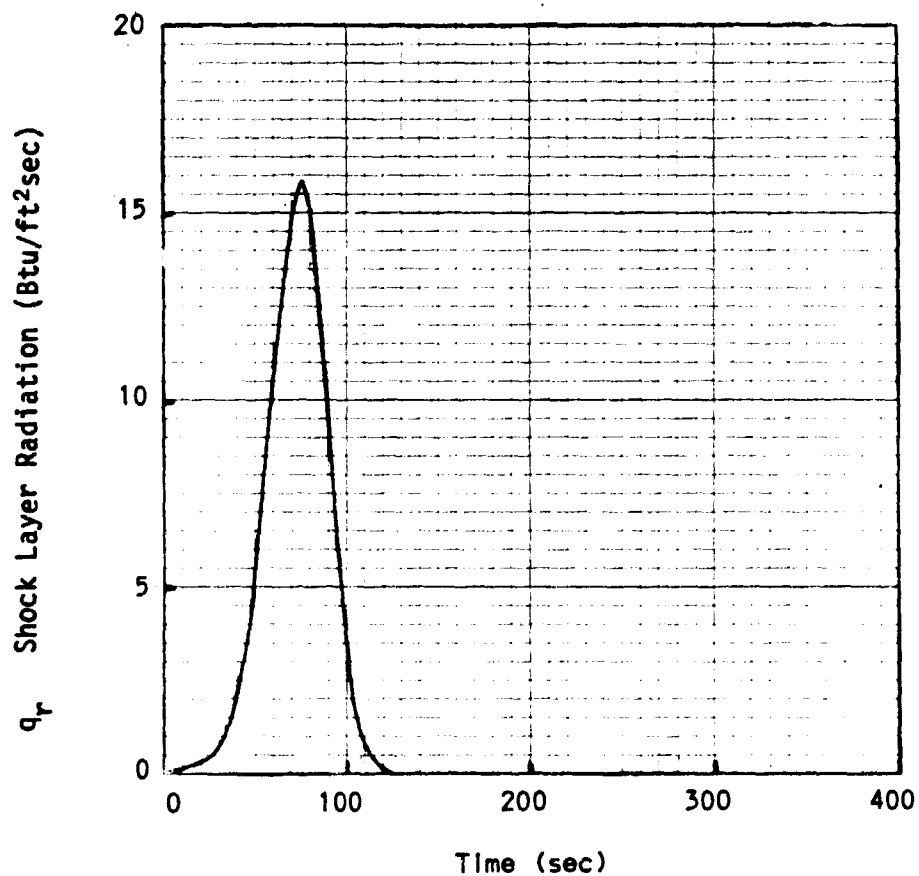


Fig. 9 Brake Center Radiative Heating Rate For
Boeing Lifting Brake Trajectory (5 x Geo)

5 x GEO Boeing Trajectory

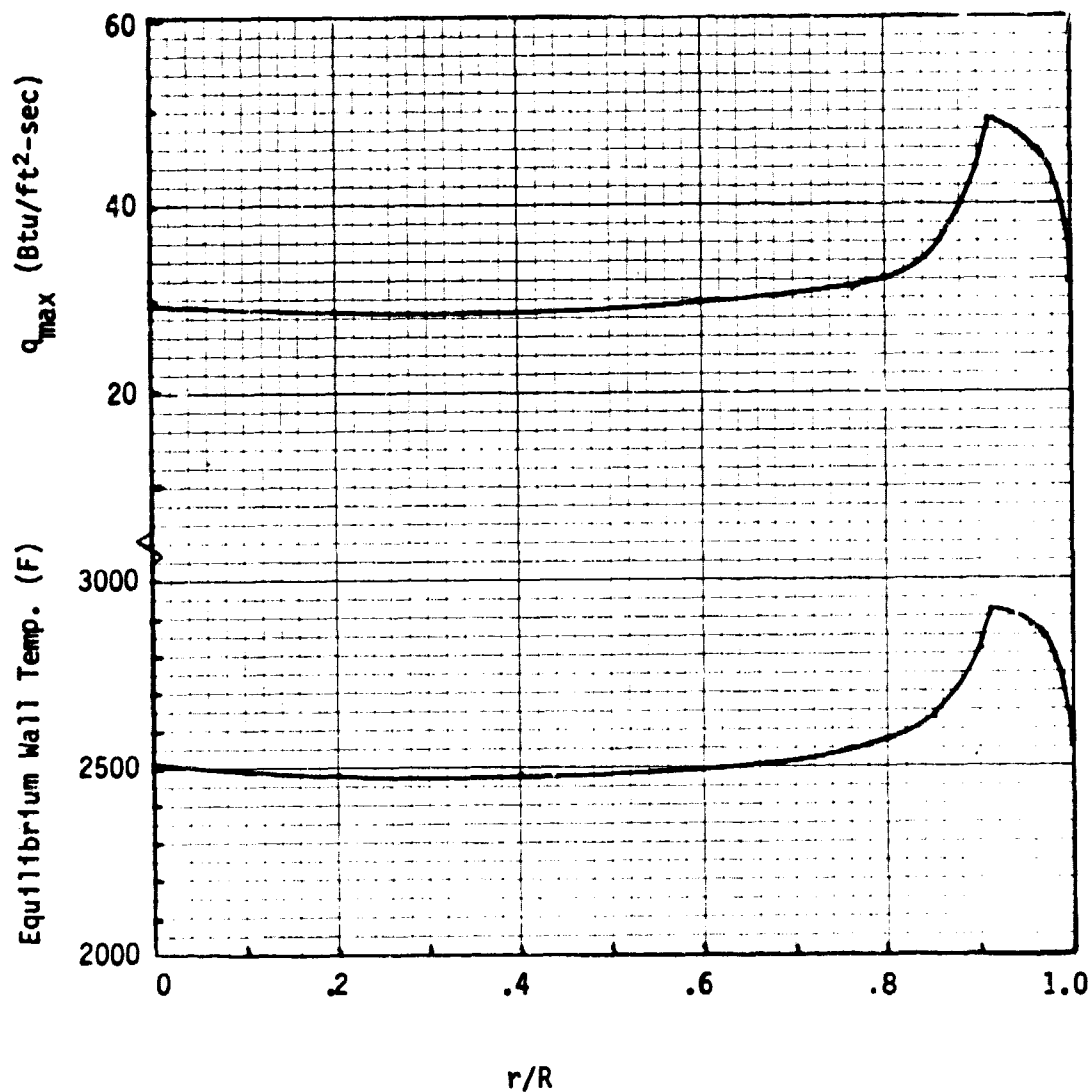
 $\alpha = 15 \text{ Deg.}$ $c = 0.8$ 

Fig. 10 Maximum Heating Rate And Equilibrium Wall Temperature Distribution On AOTV Brake Face ($R_{\max} = 25 \text{ ft.}$)

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5 x GEO Boeing Lifting Brake Trajectory
Angle Of Attack = 15 Deg.

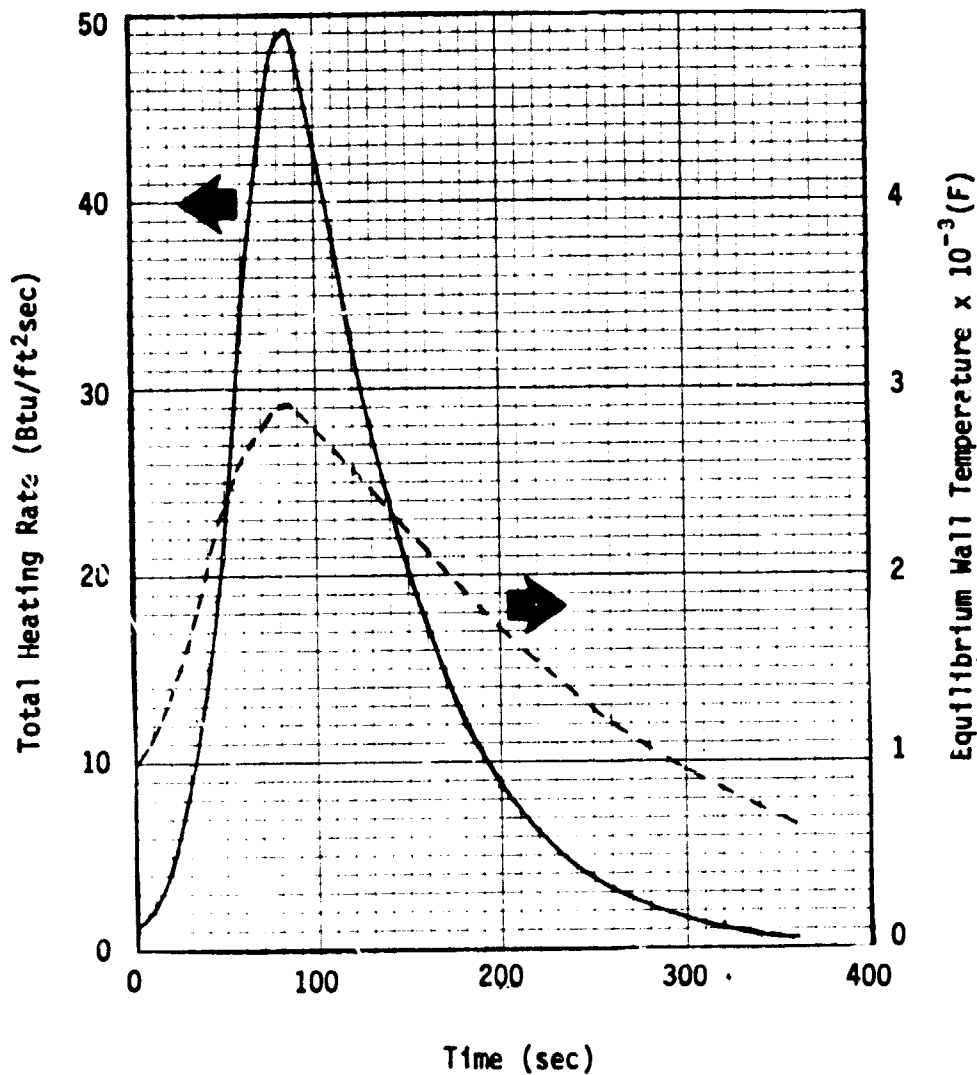


Fig. 11 Heating Rate And Equilibrium Wall Temperature History For Body Point 91

5 x GEO Boeing Lifting Brake Trajectory
Angle of Attack = 15 Deg.

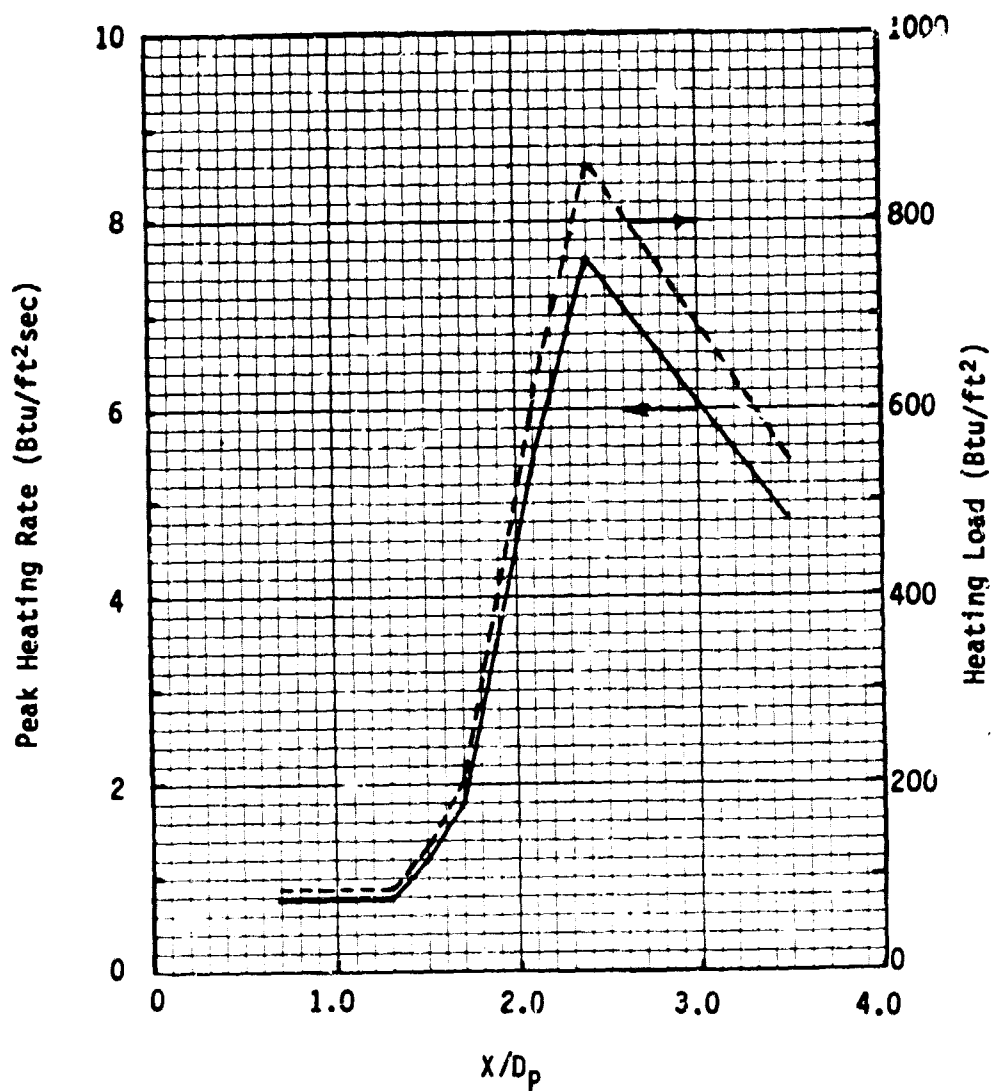


Fig. 12 Maximum Heating Rate and Heating Load
Distribution on AOTV Payload Windward
Line

SECTION 5

CONSIDERATIONS AND RECOMMENDATIONS

Based on the magnitude of the thermal environments presented in the foregoing sections, it is concluded that the thermal environment will be a primary constraint in designing an aerobraking orbital transfer vehicle. In order for a viable AOTV design concept to emerge, effort must be directed towards developing relevant aerothermal technology and the resulting design calculation methodology. As part of the work leading up to the preliminary thermal environment, several points of consideration have been identified.

(1) A detailed thermal model of the fabric-rib region should be developed for the brake concept. Simplistically, the fabric brake face is heated on one sided aerodynamically and the fabric reradiates on two sides. This would lower the radiative equilibrium temperature and increase the vehicles capability. In this study, only one side of the fabric was allowed to reradiate. It is true that the current concepts would allow two sided reradiation over most of the fabric surface. However, the design area will be near the structural ribs where the fabric is attached. In this area, the attachment geometry and materials will determine if reradiation from two sides is a realistic assumption. In most attachment concepts to date, this effect has not been addressed. A thermal analysis of different attachment concepts is required to take advantage of this potential. Until a viable attachment concept is established, the brake fabric design points will be near the attachment where only one sided reradiation can be assumed.

(2) Theoretical math models of the boundary layer/shock layer may require a nonsimilar solution. Work by Smith and Jaffe (Ref. 7) shows that a similar solution underpredicts wind tunnel data on the corner of a flat faced cylinder. Whereas a nonsimilar solution matches the data. This work is contradicted by the results of Marvin and Sinclair (Ref. 8) which shows that the similar solution matches tunnel data and the nonsimilar solutions overpredict the data. The point needs to be examined to determine which technique is most applicable to the AOTV brake face and edge.

(3) Future testing should address the effect of the sting on the payload reattachment flow. The test program (Ref. 2) which forms the basis for this report was conducted with the initial thought that payload heating would be minimal. Accordingly, little attention was given to potential sting effects on the base flowfield. Since the reattachment heating was found to be quite significant, future test should attempt to minimize the sting effect on the base flowfield.

(4) The type of wake flowfield shear layer should be identified to insure proper heating scaling. The shear layer which originates off of the brake and impinges on the payload may exhibit two characteristics. At the highest density levels the long distance in the shear layer may promote transition to turbulent flow before or upon impingement. If this occurs, a detailed understanding of the flowfield in the tunnel and in flight is required to make the proper aeroheating predictions. Alternately, at lower density levels the wake shear layer may contain rarefied flow effects. These effects will spread out the

reattachment heating location and lower the overall level. Thus, if a vehicle is designed where shear layer impingement occurs, a detailed understanding of the wake flowfield will be required in order to calculate design aerothermal environments.

(5) In order to lower the overall thermal environments to match contemporary material capabilities, several concept alternatives should be considered. No aeroheating data has been obtained on the forward firing jet/ballute concept. This data is required if this concept is to be given serious consideration. The use of a forward firing jet with a brake geometry might be considered to lower brake face heating and possibly affect reattachment heating levels. Transpiration cooling near the ribs may yield a method to use the two sided reradiation loss between ribs and lower overall heating levels. Transpiration cooling of a portion of the payload may be a viable technique to lower reattachment heating. An aerobrake with a ballute torus may solve edge heating and payload reattachment heating problems. Testing is required to establish the ballute torus size for satisfactory performance.

(6) Thermal properties of partially ionized air significantly affect the theoretical methods used in scaling from tunnel to flight conditions. The Prandtl number plays a particularly key role in heating calculations. The transport properties studies of the past must be revisited with an eye on AOTV application.

(7) Many of the ceramic fabrics currently being studied for the aerobrake

are porous. The pressure differential across the brake face, front to back side, will cause increased convective aeroheating. The fabric must be closed to the flow or this additional heating must be accounted for in the design. This flow through the brake could also alter the wake reattachment flowfield.

(8) Recent work on radiative heating (Ref. 9) to aerobrake geometrics indicates that nonequilibrium radiation may be a major factor in heat shield design. The low post shock velocities produced by the aerobrake should allow sufficient time for species collisions to produce equilibrium conditions. Moreover, the thick shock layer produced by the brake (approximately 6 feet for a 50 foot brake) reduces the percentage of the shock layer involved in nonequilibrium radiation to a small percent. These effects should minimize the nonequilibrium radiation levels. Additional studies are required to establish the magnitude of this process.

(9) Reaction control motors will be used to produce the roll and control in some concepts. The effects of firings of these motors in the upper atmosphere can completely dominate the flowfield in the wake of a brake. Analytical and experimental studies will be required to assess the impact of RCS operations on the design environment.

All of the preceding considerations must be addressed before a viable aerothermal design environment can be generated. There are a few of these considerations which take precedent and thus should be addressed next. Accordingly, the following near term recommendations are made.

(1) A set of parametric wind tests should be conducted to help isolate the best concept from an aerothermal perspective. These tests should be screening in nature and therefore not detailed. Each concept should contain measurements of like nature tested at the same flow conditions.

(2) A math model scaling method should be developed for each concept to scale tunnel conditions to flight conditions. The same theoretical techniques should be used on each concept whenever possible.

(3) Utilizing the tunnel data and math models, preliminary design environments should be developed. These environments should be compared and examined as to which is most compatible with current material capabilities. The results of these three steps should be documented and utilized in the overall concept selection process.

SECTION 6

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APPENDIX A

REFERENCE RADIATIVE RESULTS

The output from the RADCOR code for the 5 x Geo entry trajectory is contained herein. The page of standard output is a print of the results for one time point. Under the heading of ''SHOCK LAYER GAS PROPERTIES'' the free-stream and post shock conditions are given. Names and meanings not listed in the foregoing section are:

UINF	= Free stream velocity (ft/sec)
RINF	= Free stream density (slugs/ft ³)
TD	= Post shock temperature ($T_{\delta} - {}^{\circ}\text{K}$)
RZB	= Density ratio across the shock ($\frac{\rho_{\infty}}{\rho_{\delta}}$)
RE	= Reynolds number = $Re_{\delta} = \rho_{\infty} U_{\infty} R / \mu_{\delta,0}$
PD	= Post shock pressure (P_{δ})
R	= Body radius
HTOTAL	= Free stream total enthalpy
VD	= Post shock normal velocity
(R*U)INF	= Free stream mass flux per unit area

Under the heading of ''SPECIES MASS FRACTIONS'' the post shock species mass fractions of air are listed. Likewise, the post shock species mole fractions are given under the heading ''SPECIES MOLE FRACTIONS''. Under the heading of ''RADIATIVE FLUX PROPERTIES'' information pertaining to the radiative heating calculation is given. The names and descriptions of the variables printed are:

PATHLENGTH = Path length used in the isothermal radiation calculation which equals the stand-off distance.

GAMMA = Γ (radiative cooling parameter)

ISOTHERMAL FLUX = $(Q_r)_{\text{ISOTHERMAL}}$

ACTUAL FLUX = q_r (surface heating rate)

CHR = Radiative heat transfer coefficient

DELTA/R = δ/R (nondimensional stand-off distance)

5RINF*UNIF3 = $.5 \rho_{\infty} U_{\infty}^3$ (free stream kinetic energy flux per unit area)

QRR = $(q_r)/(q_r)_0$ the heating rate referenced to the stagnation value

BOEING LIFTING BRAKE TRAJ (5XGE0)

TIME = 4.0

5 1 0 5 .100+001

-SHOCK LAYER GAS PROPERTIES-

UTNF (FT/SEC)	RINF (SLUG/FT**3)	HTOTAL (FT**2/SEC**2)	TO (OK)	PO (ATM)
3.4172+004	5.6300-011	5.8386+008	7.2596+003	2.9654-005

R2B	RE	VO (FT/SEC)	(R+U)INF LB/FT**2-SEC	P (FT)
4.5542-002	3.5834+002	-1.5562+003	6.1899-005	7.5070+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
4.1200-009	1.8483-005	1.9287-001	6.7504-001

O+	N+	F-
2.8316-002	9.9106-002	4.8619-006

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
1.6513-009	8.6494-006	1.5461-001	6.1841-001

O+	N+	F-
2.2698-002	9.0791-002	1.1349-001

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.SPINF+UINF3 (WATTS/CM**2)
.1714+003	.1161+000	.9523-001	.4531-001	.2763-001	.7250+000	.1640+001
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.5625+001	.1161+000	.4392-001	.3993-001	.2763-001	.7250+000	.1445+001

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.1000+001

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TIME = 10.0

-SHOEN LAYER GAS PROPERTIES-

UNIT (FT/SEC)	PIRF (SLUG/FT**3)	HYDRA (FT**2/SEC**2)	TD (IN)	BD (A*H)
3.4145-004	3.0600-010	5.4431-008	7.4300-003	5.3820-005

RZB	RE	VO (FI/SFC)	TR+UINF LB/FT**2-SFC	F (FT)
6.6485-002	6.4671-002	-1.8891-003	1.1659-004	2.5000+001

-SPECIES MASS FRACTIONS-

O ₂	N ₂	O	N
2.6600-009	2.4175-005	1.9356-001	6.7744-001

O+	N+	F-
2.7629-002	9.6702-002	4.7440-006

-SPECIES MOLT FRACTIONS-

02	N2	0	N
8.2742-010	1.1104-005	1.5559-001	6.2232-001

O ₂	N ⁺	F ⁻
2.2208-002	8.8834-002	1.1104-001

-RADIATIVE FLUX PROPERTIES-

PATHTLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.5*PI*N*U*INF3 (WATTS/CM**2)
.1733+003	.1379+000	.2131+000	.9673-001	.3129+001	.2274+000	.3091+001
(FT)		(PTH/PTH-SEC)	(PTH/F12-SEC)			(PTH/F12-SEC)
.5686+001	.1379+000	.1878+003	.8524+001	.3129+001	.2274+000	.2724+001

QPR

.1000-001

ORIGINAL PHOTO OF
OF POOR QUALITY

BOEING LIFTING BRAKE TRAJ (SXGEO)

TIME = 16.0

5 1 0 5 .100+001

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	RINF (SLUG/FT**3)	HTOTAL (FT**2/SEC**2)	TD (IN)	PD (ATM)
5.4194+004	2.0500-010	5.4461+008	7.6104+003	1.0790-004

RZM	RE	VD (FT/SEC)	TR*UINF LB/FT**2-SEC	R (FT)
4.7450-002	1.1945+003	-1.6275+003	2.2553-004	2.5070+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
4.2400-009	3.1652-005	1.9449-001	6.8069-001

O*	N*	F-
2.6698-002	9.3441-002	4.5441-006

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
3.3241-009	1.4593-005	1.5697-001	6.2766-001

O*	N*	F-
2.1540-002	8.6161-002	1.0770-001

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CMR	DELTA/R	.5RINF*UINF3 (WATTS/CM**2)
.1752+003	.1371+000	.4102+000	.1864+000	.3116-001	.2299+000	.5983+001
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.5747+001	.1371+000	.1614+000	.1643+000	.3116-001	.2299+000	.5273+001

OPR

.1000+001

ORIGIN OF POOR QUALITY

BOEING LIFTING BRANK TRAJ (SKEEN)
5 1 0 5 .100+001

TIME = 22.0

-SHOCK LAYER GAS PROPERTIES-

UTNF (FT/SEC)	RINF (SLUG/FT**3)	HTOTAL (FT**2/SEC**2)	TD (OH)	PD (ATM)
3.4201+004	3.9200-010	5.8465+008	7.8026+003	2.0615-004

PZB	RE	VD (FT/SEC)	TR*UTNF (B/FT**2-SFC)	R (FT)
4.8663-002	2.1792+003	1.6643+003	4.3135-004	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
4.1200-009	4.0635-005	1.9511-001	6.8285-001

O*	N*	F-
2.6078-002	9.1273-002	4.4777-006

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
1.6662+009	1.8782-005	1.5782-001	6.3123-001

O*	N*	F-
2.1693-002	8.4373-002	1.0547-001

-RADIATIVE FLUX PROPERTIES-

PATH LENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.SRINF*UTNF3 (WATTS/CM**2)
.1775+003	.1413+000	.8049+000	.7646+000	.5184-001	.2330+000	.1145+002
(FT)	.1413+000	(BTU/FT2-SEC)	(BTU/FT2-SEC)	.3184-001	.5330+000	(BTU/FT2-SEC)
.5524+001		.7178+000	.7213+000			.1009+002

OPR

.1000+001

ORIGINAL DOCUMENT IS
OF POOR QUALITY

BOEING LIFTING BRANK TRAJ (SXGEO)
5 1 0 5 .100+001

TIME = 28.0

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	RINF (SLUG/FT**3)	HOTAL (FT**2/SEC**2)	TD (OK)	PD (ATM)
1.4202+004	7.5800+010	5.8489+008	7.9963+003	1.9822+004

R2B	RE	VD (FT/SEC)	(R+U)INF LB/FT**2-SEC	R (FT)
4.9688+002	4.0202+003	-1.6994+003	4.3411+004	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
8.2400+000	5.3585+005	1.9616+001	6.8649+001

O*	N*	F-
2.5035+002	8.7622+002	4.2986+006

-SPECIES MOLE FRACTIONS-

C-	N2	O	N
3.3466+009	2.4872+005	1.5031+001	6.3729+001

O*	N*	F-
2.0336+002	8.1342+002	1.0168+001

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.SRINF+UINF3 (WATTS/CM**2)
.1795+003	.1464+000	.1620+001	.7229+000	.7265+001	.2355+000	.2214+002
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.5888+001	.1464+000	.1428+001	.6370+000	.7265+001	.2355+000	.1951+002

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.1000+001

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BOEING LIFTING BRANK TRAJ (EXCEL)

TIME = 34.0

5 1 0 5 .100+001

-CHECK LAYER GAS PROPERTIES-

UTNF (FT/SEC)	RINF (SLUG/FT**2)	H1OTAL (FT**2/SEC**2)	YD (CM)	BO (ATM)
1.4180+004	1.4000+000	5.4444+008	4.1901+003	7.9412+004

PZR	RC	VT (FT/SEC)	TROUTINP LB/FT**2-SEC	F (FT)
5.0806+002	7.0844+001	-1.7371+003	1.5400+003	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
1.2360+004	6.4445+005	1.9690+001	6.8909+001

O*	N*	F-
2.4289+002	8.5012+002	4.1705+006

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
5.0955+000	3.1490+005	1.6044+001	6.4164+001

O*	N*	F-
1.490+002	7.9159+002	9.8949+002

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.5PINF+UTINF3 (WATTS/CM**2)
.1816+003	.1575+000	.3213+001	.1404+001	.1437+001	.2343+000	.4085+002
(FT)	.1575+000	(BTU/FT2-SEC)	(BTU/FT2-SEC)	.1437+001	.2343+000	(BTU/FT2-SEC)
.5957+001		.2471+001	.1237+001			.3600+002

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.1000+001

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OF POOR QUALITY

BOEING LIFTING BRAKE TRAJ (SXGEO)

TIME = 40.0

5 1 0 5 .100+001

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	RINF (SLUG/FT**3)	HTOTAL (FT**2/SEC**2)	VD (IN)	PD (ATM)
3.4159+004	2.4800+009	5.8342+008	8.3710+003	1.2967+003

RZB	RE	VD (FT/SEC)	(R+U)INF LB/FT**2-SEC	R (FT)
5.1847+002	1.1999+004	-1.7711+003	2.7256+003	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
2.2660+008	8.7219+005	1.9781+001	6.9225+001

O*	N*	F-
2.3380+002	8.1831+002	4.0145+006

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
9.2656+009	4.0758+005	1.6177+001	6.4699+001

O*	N*	F-
1.9120+002	7.6481+002	9.5601+002

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISO THERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/P	.5RINF+UINF3 (WATTS/CM**2)
.1835+003	.1685+000	.6079+001	.2603+001	.3607+001	.2409+000	.7216+002
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.6021+001	.1685+000	.6357+001	.2294+001	.3607+001	.2409+000	.6359+002

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.1000+001

ORIGINAL PAGE 15
OF POOR QUALITY

BOEING LIFTING BRAKE TRAJ (5XGE0)

TIME = 45.0

5 1 0 5 .100+001

-SHOCK LAYER GAS PROPERTIES-

UTNF (FT/SEC)	PIWF (SLUG/FT**3)	HTOTAL (FT**2/SEC**2)	TD (OK)	PD (ATM)
3.4116+004	3.8600-009	5.8195+008	8.5155+003	2.0634-003

RZB	RF	VM (FT/SEC)	TR*UTNF LB/FT**2-SEC	R (FT)
5.2704-002	1.4462+004	-1.7980+003	4.3467-003	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
3.0900-008	1.0781-004	1.9878-001	6.9563-001

O*	N*	F-
2.2407-002	7.8423-002	3.8473-006

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
1.2685-008	5.0583-005	1.6422-001	6.5276-001

O*	N*	F-
1.8397-002	7.3390-002	9.1987-002

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.5PIWF*UINF3 (WATTS/CM**2)
.1851+003	.1758+000	.1009+002	.4265+001	.3716-001	.2429+000	.1148+003
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.6074+001	.1758+000	.4891+001	.1759+001	.3716-001	.2429+000	.1012+003

OPR

.1000+001

ORIGINAL PAGE IS
OF POOR QUALITY

BOEING LIFTING BRAKE TRAJ (5XGE0)

TIME = 50.0

5 1 0 5 .100+001

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	RINF (SLUG/FT**3)	HITOTAL (FT**2/SEC**2)	TD (OK)	PD (ATM)
3.4038+004	6.0700+009	5.7929+008	8.6366+003	3.1454+003

RZR	RE	VD (FT/SEC)	(R*U)INF LB/FT**2-SFC	R (FT)
5.3586+002	2.7328+004	-1.8240+003	6.6475+003	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
3.9147+008	1.3379+004	2.0001+001	6.9990+001

O*	N*	F-
2.1182+002	7.4136+002	3.6377+006

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
1.6150+004	6.3089+005	1.6504+001	6.6002+001

O*	N*	F-
1.7480+002	6.9919+002	8.7199+002

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.5RINF*UINF3 (WATTS/CM**2)
.1868+003	.1773+000	.1549+002	.6532+001	.3738+001	.2451+000	.1748+003
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.8127+001	.1773+000	.1365+002	.5756+001	.3738+001	.2451+000	.1540+003

QRR

.1000+001

ORIGINAL FROM 73
OF POOR QUALITY

BOEING LIFTING BRAKE TRAJ (SXGEN)

5 1 0 5 .100+001

TIME = 55.0

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	RINF (SLUG/FT**3)	HINFAL (FT**2/SEC**2)	TD (OK)	PD (ATM)
3.3920+004	8.7200-009	5.7528+008	8.7327+003	4.4840-003

PZR	RF	VD (FT/SEC)	(R*UINF LH/FT**2-SEC)	P (FT)
5.4301-002	3.8001+004	-1.8419+003	9.5165-003	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
5.3560-008	1.6259-004	2.0119-001	7.0401-001

O*	N*	F-
1.9998-002	6.9993-002	3.4337-006

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
2.2208-008	7.7049-005	1.6685-001	6.6723-001

O*	N*	F-
1.6584-002	6.6337-002	8.2921-002

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.5RINF*UINF3 (WATTS/CM**2)
.1881+003	.1750+000	.2174+002	.9203+001	.3704-001	.2468+000	.2484+003
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.6170+001	.1750+000	.1916+002	.8109+001	.3704-001	.2468+000	.2189+003

QPR

.1060+001

ORIGINAL PAGE 13
OF POOR QUALITY

BOEING LIFTING BRAKE TRAJ (5XGE0)
5 1 0 5 .100+001

TIME = 60.0

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	RINF (SLUG/FT**3)	HTOTAL (FT**2/SEC**2)	TD (OK)	PD (ATM)
3.3775+004	1.2200-008	5.7038+008	8.8136+003	6.2154-003

R2B	RE	VD (FT/SEC)	(R*U)INF LB/FT**2-SEC	P (FT)
5.4999-002	5.1514+004	-1.8576+003	1.3257-002	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
7.0040-008	1.9755-004	2.0244-001	7.0834-001

O*	N*	F-
1.8752-002	6.5632-002	3.2198-006

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
2.9193-004	9.4101-005	1.6876-001	6.7483-001

O*	N*	F-
1.5632-002	6.2527-002	7.8159-002

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.5RINF+UINF3 (WATTS/CM**2)
.1893+003	.1692+000	.2901+002	.1241+002	.3618-001	.2485+000	.3432+003
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.6212+001	.1692+000	.2558+002	.1094+002	.3618-001	.2485+000	.3024+003

QRR

.1000+001

ORIGINAL PAGE IS
OF POOR QUALITY

BOEING LIFTING BRAKE TRAJ (EXGEC)
5 1 0 5 .100+001

TIME = 45.0

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	PINF (SLUG/FT**3)	H1OTAL (FT**2/SEC**2)	T0 (OK)	P0 (ATM)
3.3541+004	1.6000+008	5.6250+008	8.8462+003	8.0335+003

R2B	RE	VH (FT/SEC)	TR*UINF LB/FT**2-SEC	P (FT)
5.5613+002	6.5546+004	-1.8653+003	1.7266+002	2.5070+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
8.8580+008	2.4222+004	2.0403+001	7.1345+001

O*	N*	F-
1.7164+002	6.0076+002	2.9472+006

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
3.7167+008	1.1615+004	1.7121+001	6.8463+001

O*	N*	F-
1.4404+002	5.7616+002	7.2721+002

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.5RINF*UINF3 (WATTS/CM**2)
.1905+003	.1549+000	.3414+002	.1498+002	.3309+001	.2499+000	.4408+003
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.6249+001	.1549+000	.1008+002	.1320+002	.3309+001	.2499+000	.3884+003

QRR

.1000+001

ORIGINAL PAGE IS
OF POOR QUALITY

BOEING LIFTING BRAKE TRAJ (5X6E0)

TIME = 70.0

5 1 0 5 .100+001

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	RINF (SLUG/FT**3)	H1OTAL (FT**2/SEC**2)	TD (OK)	PD (ATM)
3.3265+004	2.0500+008	5.5328+008	8.8518+003	1.0118+002

RZR	RE	VD (FT/SEC)	(R*U)INF LB/FT**2-SEC	P (FT)
5.6164+002	8.1748+004	-1.8683+003	2.1940+002	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
1.0506+007	3.0234+004	2.0578+001	7.1994+001

O*	N*	F-
1.5406+002	5.3919+002	2.6452+006

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
4.4411+008	1.4607+004	1.7398+001	6.9563+001

O*	N*	F-
1.3025+002	5.2098+002	6.5123+002

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.5RINF*UINF3 (WATTS/CM**2)
.1915+003	.1365+000	.3761+002	.1711+002	.3107+001	.2513+000	.5509+003
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.6281+001	.1365+000	.3314+002	.1508+002	.3107+001	.2513+000	.4854+003

QPR

.1000+001

ORIGINAL PAGE IS
OF POOR QUALITY

BOEING LIFTING BRAKE TRAJ (5XGEN)

TIME = 75.0

5 1 0 5 .100+001

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	RINF (SLUG/FT**3)	H1OTAL (FT**2/SEC**2)	YD (CM)	PD (ATM)
3.2928+004	2.5200-008	5.4213+008	8.8182+003	1.2140-002

P2B	RF	VO (FT/SEC)	(R*UINF) LB/FT**2-SEC	R (FT)
5.6777-002	9.7976+004	-1.8696+003	2.6698-002	2.5070+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
1.3596-007	3.8405-004	2.0770-001	7.2655-001

O*	N*	F-
1.3495-002	4.7231-002	2.3171-006

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
5.7944-008	1.8706-004	1.7703-001	7.0776-001

O*	N*	F-
1.1502-002	4.6009-002	5.7512-002

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.5RINF*UINF3 (WATTS/CM**2)
.1926+003	.1147+000	.3768+002	.1799+002	.2739-001	.2527+000	.6568+003
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.6318+001	.1147+000	.3320+002	.1585+002	.2739-001	.2527+000	.5788+003

QRR

.1000+001

ORIGINAL PAGE IS
OF POOR QUALITY

BOEING LIFTING BRAKE TRAJ (SXGE01)
5 1 0 5 .100+001

TIME = 40.0

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	PINF (SLUG/FT**3)	HTOTAL (FT**2/SEC**2)	TD (OK)	PD (ATM)
3.2514+004	2.9700-008	5.2858+008	8.7358+003	1.3990-002
11	11	(5727.)	(1.441-002)	← LANMIN

R2B	RE	VD (FT/SEC)	(R+U)INF (B/FT**2-SFC)	R (FT)
5.7158-002	1.1294+005	-1.8584+003	3.1069-002	2.5070+001
5.541-002	95000			← LANMIN

-SPECIES MASS FRACTIONS-

O2	N2	O	N
1.6480-007	5.0445-004	2.0979-001	7.3379-001

O+	N+	F-
1.1395-002	3.9883-002	1.9566-006

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
7.0873-008	2.4793-004	1.8045-001	7.2129-001

O+	N+	F-
9.8012-003	3.9205-002	4.9006-002

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.5PINF+UINF3 (WATTS/CM**2)
.1932+003	.9004-001	.3355+002	.1706+002	.2289-001	.2536+000	.7453+003
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.6340+001	.9004-001	.2956+002	.1503+002	.2289-001	.2536+000	.6567+003

QPR

.1000+001

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BOEING LIFTING BRARE TRAJ (SXGEOT)

TIME = 45.0

5 1 0 5 .100+001

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	RINF (SLUG/FT**3)	HINFAL (FT**2/SEC**2)	TO (OK)	PO (ATM)
3.2067+004	1.4100+008	5.1415+008	4.8049+003	1.5671+002

RZR	RF	VO (FT/SEC)	IRROUTINE LB/FT**2-SEC	F (FT)
5.7319+002	1.2776+005	-1.4380+003	3.5182+002	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
2.1012+007	7.0705+004	2.1202+001	7.4138+001

O*	N*	F-
9.1669+003	3.2084+002	1.5747+006

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
6.1246+008	3.4743+004	1.8415+001	7.3580+001

O*	N*	F-
7.9616+003	3.1847+002	3.9808+002

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.59INF*UINF3 (WATTS/CM**2)
.1935+003	.6494+001	.2665+002	.1467+002	.1787+001	.2540+000	.8209+003
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.6350+001	.6494+001	.2349+002	.1292+002	.1787+001	.2540+000	.7234+003

OPR

.1000+001

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BOEING LIFTING BRAKE TRAJ (5X6E0)
5 1 0 5 .100+001

TIME = 90.0

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	PINF (SLUG/FT**3)	H1OTAL (FT**2/SEC**2)	TD (OK)	PD (ATM)
3.1563+004	3.7600-008	4.9811+008	8.4135+003	1.8698-002

RZR	RE	VD (FT/SEC)	(R*U)INF LB/FT**2-SEC	R (FT)
5.7277-002	1.3990+005	-1.8078-003	3.8183-002	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
2.6780-007	1.0392-003	2.1426-001	7.4887-001

O*	N*	F-
6.9305-003	2.4257-002	1.1907-006

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
1.1745-007	5.2091-004	1.8795-001	7.5074-001

O*	N*	F-
6.6793-003	2.4317-002	3.0397-002

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.SRINF*UINF3 (WATTS/CM**2)
.1935+003	.4217-001	.1820+002	.1102+002	.1277-001	.2539+000	.8631+003
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.6347+001	.4217-001	.1604+002	.9713+001	.1277-001	.2539+000	.7606+003

QRR

.1000+001

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BOEING LIFTING BRAKE TRAJ (XGEN)

TIME = 65.0

5 1 0 5 .100+001

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	PINF (SLUG/FT**3)	H1OTAL (FT**2/SEC**2)	TD (OK)	PD (ATH)
3.1041+004	1.9800-008	4.4177+008	4.1451+003	1.7094-002

R2R	RF	VD (FT/SEC)	(R*UINF) LB/FT**2-SEC	R (FT)
5.6776-002	1.4948+005	-1.7624+003	3.9749-002	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
3.5020-007	1.7283-003	2.1643-001	7.5570-001

O*	N*	F-
4.7551-003	1.6643-002	8.1646-007

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
1.5513-007	4.7496-004	1.9175-001	7.6525-001

O*	N*	F-
4.2127-003	1.6851-002	2.1064-002

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHP	DELTA/R	.5PINF*UINF3 (WATTS/CM**2)
.1926+003	.2348-001	.1020+002	.6944+001	.7990-002	.2527+000	.8690+003
(FT)		(PIU/FT2-SEC)	(RTU/FT2-SEC)			(RTU/FT2-SEC)
.6318+001	.2348-001	.4989+001	.6117+001	.7990-002	.2527+000	.7658+003

QRR

.1000+001

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BOEING LIFTING BRAKE TRAJ (5XFE0)

TIME = 100.0

5 1 0 5 .100+001

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	PINF (SLUG/FT**3)	HTOTAL (FT**2/SEC**2)	TD (IN)	PD (ATM)
3.0507+004	4.1100-008	4.6534+008	7.8495+003	1.7064-002

P2B	RE	VD (FT/SEC)	(R*U)INF LB/FT**2-SEC	R (FT)
5.6055-002	1.5680+005	-1.7101+003	4.0341-002	2.5070+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
4.6144-007	3.0443-003	2.1809-001	7.6028-001

O*	N*	F-
3.0976-003	1.3822-002	5.3188-007

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
2.0605-007	1.5537-003	1.9478-001	7.7600-001

O*	N*	F-
2.7665-003	1.1066-002	1.3833-002

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.5PINF+UINF3 (WATTS/CM**2)
.1913+003	.1223-001	.5208+001	.3980+001	.4672-002	.2510+000	.8519+003
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.6275+001	.1223-001	.4589+001	.3577+001	.4672-002	.2510+000	.7507+003

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.1000+001

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BOEING LIFTING BRAKE TRAJ (SXGEO)

TIME = 105.0

5 1 0 5 .100+001

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	RINF (SLUG/FT**2)	H1OTAL (FT**2/SEC**2)	T0 (OK)	P0 (ATM)
7.8973+004	4.2300+008	4.4919+008	7.4744+003	1.6974+002

RZR	RT	VD (FT/SEC)	(R+U)INF LB/FT**2-SEC	R (FT)
5.4837+002	1.6798+005	-1.6436+003	4.0702+002	7.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
6.9216+007	6.5822+003	2.1947+001	7.6157+001

O*	N*	F-
1.7190+003	6.0167+003	2.9517+007

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
3.1156+007	3.3861+003	1.9758+001	7.8356+001

O*	N*	F-
1.5476+003	6.1404+003	7.7780+003

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHP	DELTA/R	.5RINF+UINFJ (WATTS/CM**2)
.1890+003	.5121+002	.2129+001	.1865+001	.7242+002	.2441+000	.8315+003
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.6202+001	.5121+002	.1876+001	.1643+001	.7242+002	.7441+000	.7328+003

. QPR

.1000+001

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BOEING LIFTING BRAKE TRAJ (SXGEO)
5 1 0 5 .100+001

TIME = 110.0

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	RINF (SLUG/FT**3)	HOTAL (FT**2/SEC**2)	TD (OK)	PD (ATM)
2.9454+004	4.2500-008	4.3377+008	7.0903+003	1.6494-002

RZB	RE	VD (FT/SEC)	(R*U)INF LB/FT**2-SEC	P (FT)
5.3412-002	1.7617+005	-1.5732+003	4.0275-002	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
1.0588-006	1.5175-002	2.2029-001	7.5586-001

O*	N*	F-
8.9464-004	3.1312-003	1.5361-007

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
4.8052-007	7.8706-003	1.9995-001	7.8406-001

O*	N*	F-
8.1202-004	3.2481-003	4.0601-003

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.5PINF+UINF3 (WATTS/CM**2)
.1864+003	.2017-002	.7997+000	.7958+000	.1004-002	.2447+000	.7928+003
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.6117+001	.2017-002	.7047+000	.7012+000	.1004-002	.2447+000	.6986+003

ORR

.1000+001

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BOEING LIFTING BRAKE TRAJ (SXGE0)
5 1 0 5 .100+001

TIME = 115.0

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	QINF (SLUG/FT**3)	HTOTAL (FT**2/SEC**2)	TD (OK)	PD (ATM)
2.8963+004	4.1600-008	4.1943+008	6.7675+003	1.5674-002

R2R	RF	VD (FT/SEC)	ROUTINF LB/FT**2-SEC	P (FT)
5.2015-002	1.8044+005	-1.5065+003	3.8765-002	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
1.5368-006	3.1345-002	2.2069-001	7.4108-001

O*	N*	F-
4.9593-004	1.7357-003	8.5152-008

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
7.0460-007	1.6425-007	2.0237-001	7.7665-001

O*	N*	F-
4.5476-004	1.8191-003	2.2738-003

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.5RINF*UINF3 (WATTS/CM**2)
.1838+003	.8919-003	.3291+000	.3291+000	.4460-003	.2413+000	.7379+003
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.6032+001	.8919-003	.2900+000	.2900+000	.4460-003	.2413+000	.6502+003

QPR

.1000+001

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BOEING LIFTING BRAKE TRAJ (5XGE0)
 5 1 0 5 .100+001

TIME = 120.0

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	RINF (SLUG/FT**3)	HTOTAL (FT**2/SEC**2)	TD (OK)	PD (ATM)
2.8487+004	4.0400-008	4.0575+008	6.5359+003	1.4699-002

RZR	RE	VD (FT/SEC)	(R+U)INF LB/FT**2-SEC	R (FT)
5.1280-002	1.8043+005	-1.4608+003	3.7028-002	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
2.0069-006	5.2792-002	2.2087-001	7.2026-001

O+	N+	F-
3.1705-004	1.1097-003	5.4438-008

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
9.3117-007	2.8000-002	2.0501-001	7.6405-001

O+	N+	F-
2.9428-004	1.1771-003	1.4714-003

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.5RINF+UTNF3 (WATTS/CM**2)
.1825+003	.4891-003	.1667+000	.1667+000	.2445-003	.2395+000	.6818+003
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.5987+001	.4891-003	.1469+000	.1469+000	.2445-003	.2395+000	.6008+003

QRR

.1000+001

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BOEING LIFTING BRAKE TRAJ (5XGE0)
5 1 0 5 .100+001

TIME = 125.0

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	PINF (SLUG/FT**3)	HTOTAL (FT**2/SEC**2)	TD (OK)	PD (ATM)
7.8063+004	3.8300-008	7.9377+008	3.3655+003	1.3510-002

RZB	RE	VN (FT/SEC)	TR*UINF LB/FT**2-SFC	R (FT)
5.0810-002	1.7441+005	-1.4259+003	3.4581-002	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
2.3937-006	7.5430-002	2.2096-001	6.9794-001

O*	H*	F*
2.2757-004	7.9650-004	3.9075-008

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
1.1249-006	4.0511-002	2.0767-001	7.4968-001

O*	N*	F*
2.1389-004	8.5554-004	1.0694-003

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.5RINF*UINF3 (WATTS/CM**2)
.1816+003	.3156-003	.9750-001	.9750-001	.1578-003	.2383+000	.6179+003
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.5958+001	.3156-003	.8592-001	.8592-001	.1578-003	.2383+000	.5445+003

ORR

.1000+001

ORIGINAL PAGE 19
OF POOR QUALITY

BOEING LIFTING BRAKE TRAJ (5X6E0)
5 1 0 5 .100+001

TIME = 110.0

-SHOCK LAYER GAS PROPERTIES-

UTNF (FT/SEC)	PINF (SLUG/FT**3)	HTOTAL (FT**2/SEC**2)	TD (OK)	PD (ATM)
2.7663+004	3.5800-008	3.8262+008	6.2295+003	1.2293-002

P2B	RE	VD (FT/SEC)	(R*U)INF LB/FT**2-SEC	R (FT)
5.0534-002	1.6505+005	-1.3979+003	3.1863-002	2.5070+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
2.6924-006	9.7955-002	2.2101-001	6.7560-001

O+	N+	F-
1.7481-004	6.1184-004	3.0016-008

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
1.2811-006	5.3265-002	2.1032-001	7.3475-001

O+	N+	F-
1.6635-004	6.6541-004	8.3176-004

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.5RINF*UTNF3 (WATTS/CM**2)
.1811+003	.2238-003	.6191-001	.6191-001	.1119-003	.2376+000	.5533+003
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.5941+001	.2238-003	.5456-001	.5456-001	.1119-003	.2376+000	.4875+003

QRR

.1000+001

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BOEING LIFTING BRAKE TRAJ (5XGE0)
5 1 0 5 .100+001

TIME = 135.0

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	RINF (SLUG/FT**3)	HTOTAL (FT**2/SEC**2)	TD (OK)	PD (ATM)
2.7299+004	3.3100-008	3.7262+008	6.1237+003	1.1069-002

RZR	RF	VD (FT/SEC)	(R+U)INF LB/FT**2-SEC	R (FT)
5.0450-002	1.5337+005	-1.3772+003	2.9072-002	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
2.8861-006	1.1721-001	2.2104-001	6.5645-001

O+	N+	F-
1.4322-004	5.0128-004	2.4592-008

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
1.3879-006	6.4421-002	2.1261-001	7.2159-001

O+	N+	F-
1.3776-004	5.5102-004	6.8878-004

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.5RINF*UINF3 (WATTS/CM**2)
.1809+003	.1732-003	.4256-001	.4256-001	.8658-004	.2374+000	.4916+003
(FT)		(RTU/FT2-SEC)	(RTU/FT2-SEC)			(RTU/FT2-SEC)
.5935+001	.1732-003	.3751-001	.3751-001	.8658-004	.2374+000	.4332+003

OPR

.1000+001

ORIGINAL PAGE 15
OF POOR QUALITY

BOEING LIFTING BRAKE TRAJ (5X6E0)

TIME = 140.0

5 1 0 5 .100+001

-SHOCK LAYER GAS PROPERTIES-

UINF	PINF	HTOTAL	TD	PD
(FT/SEC)	(SLUG/FT**3)	(FT**2/SEC**2)	(OK)	(ATM)
2.6981+004	3.0300-008	3.6399+008	6.0310+003	9.8992-003

RZB	RF	VD	(R*U)INF	R
		(FT/SEC)	LB/FT**2-SEC	(FT)
5.0364-002	1.4113+005	-1.3589+003	2.6303-002	2.5070+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
3.0220-006	1.3512-001	2.2107-001	6.3862-001

O*	N*	F-
1.2067-004	4.2233-004	2.0719-008

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
1.4679-006	7.5012-002	2.1477-001	7.0905-001

O*	N*	F-
1.1723-004	4.6890-004	5.8613-004

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH	GAMMA	ISOTHERMAL FLUX	ACTUAL FLUX	CHR	DELTA/R	.5RINF+UINF3
(CM)		(WATTS/CM**2)	(WATTS/CM**2)			(WATTS/CM**2)
.1807+003	.1390-003	.3019-001	.3019-001	.6949-004	.2372+000	.4345+003
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.5930+001	.1390-003	.2660-001	.2660-001	.6949-004	.2372+000	.3829+003

QRR

.1000+001

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BOEING LIFTING BRAKE TRAJ (SXGEO)
5 1 0 5 .100*001

TIME = 145.0

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	RIHF (SLUG/FT**3)	HITOTAL (FT**2/SEC**2)	TD (CM)	PD (ATM)
2.6686*004	2.7500-008	3.5607*008	5.9471*003	8.7897-003

RZR	RE	VG (FT/SEC)	(R*U)INF LB/FT**2-SEC	P (FT)
5.0295-002	1.2863*005	-1.3422*003	2.3611-002	2.5000*001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
3.1065-006	1.5180-001	2.2108-001	6.2201-001

O+	N+	F-
1.0363-004	3.6270-004	1.7793-004

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
1.5232-006	8.5063-002	2.1681-001	6.9711-001

O+	N+	F-
1.0162-004	4.0650-004	5.0812-004

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISO THERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.5RINF*UINF3 (WATTS/CM**2)
.1806*003	.9971-004	.1902-001	.1902-001	.4986-004	.2370*000	.3815*003
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.5928*001	.9971-004	.1676-001	.1676-001	.4986-004	.2370*000	.3362*003

QRR

.1000*001

ORIGINAL PAGE IS
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BOEING LIFTING BRAKE TRAJ (SXGEN)

TIME = 150.0

5 1 0 5 .100+001

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	PINF (SIUG/FT**3)	HTOTAL (FT**2/SEC**2)	TU (OK)	PD (ATM)
2.6434+004	2.4700-008	3.4938+008	5.8752+003	7.7449-003

RZB	RE	VD (FT/SEC)	(R*U)INF LB/FT**2-SFC	P (FT)
5.0229-002	1.1587+005	-1.3278+003	2.1007-002	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
3.1147-006	1.6501-001	2.2110-001	6.0884-001

O*	N*	F-
9.1639-005	3.2074-004	1.5735-008

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
1.5387-006	9.3160-002	2.1845-001	6.8748-001

O*	N*	F-
9.0541-005	3.6217-004	4.5271-004

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CH _R	DELTA/R	.5RINF*UINF3 (WATTS/CM**2)
.1805+003	.8495-004	.1415-001	.1415-001	.4247-004	.2369+000	.3331+003
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.5922+001	.8495-004	.1247-001	.1247-001	.4247-004	.2369+000	.2935+003

QPR

.1000+001

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BOEING LIFTING BRAKE TRAJ (SXGEO)
5 1 0 5 .100+001

TIME = 155.0

-SHOCK LAYER GAS PROPERTIES-

UTNF (FT/SEC)	RINF (SLUG/FT**3)	HTOTAL (FT**2/SEC**2)	TD (OK)	PD (ATM)
2.6209+004	2.2100+008	3.4346+008	5.8066+003	6.8144+003

R2B	RE	VD (FT/SEC)	(R+U)INF LR/FT**2-SFC	R (FT)
5.0157+002	1.0417+005	-1.3146+003	1.4636+002	2.4000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
3.1024+006	1.7789+001	2.2111+001	5.9599+001

O+	N+	F-
8.1507+005	2.8527+004	1.3995+008

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
1.5439+006	1.0118+001	2.2007+001	6.7794+001

O+	N+	F-
8.1125+005	3.2450+004	4.0563+004

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHP	DELTA/R	.5RINF+UINF3 (WATTS/CM**2)
.1804+003	.7220+004	.1049+001	.1049+001	.3610+004	.2367+000	.2905+003
(FT)		(RTU/FT2-SEC)	(RTU/FT2-SEC)			(RTU/FT2-SEC)
.5917+001	.7220+004	.9240+002	.9240+002	.3610+004	.2367+000	.2580+003

OPR

.1000+001

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BOEING LIFTING BRAKE TRAJ (5XGE0)

TIME = 160.0

5 1 0 5 .100+001

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	RINF (SLUG/FT**3)	WTOTAL (FT**2/SEC**2)	TD (OK)	PD (ATM)
2.6003+004	1.9600-008	3.3808+008	5.7401+003	5.9498-003

RZB	RE	VD (FT/SEC)	(R+U)INF LB/FT**2-SFC	R (FT)
5.0016-002	9.2934+004	-1.3006+003	1.6398-002	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
3.0673-006	1.9019-001	2.2111-001	5.8372-001

O*	N*	F-
7.2862-005	2.5502-004	1.2511-008

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
1.5373-006	1.0894-001	2.2164-001	6.6869-001

O*	N*	F-
7.3035-005	2.9214-004	3.6517-004

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.5RINF*UINF3 (WATTS/CM**2)
.1801+003	.6208-004	.7810-002	.7810-002	.3104-004	.2363+000	.2516+003
(FT)		(BTU/FT2-SEC)	(RTU/FT2-SEC)			(BTU/FT2-SEC)
.5908+001	.6208-004	.6882-002	.6882-002	.3104-004	.2363+000	.2217+003

QRR

.1000+001

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BOEING LIFTING BRAKE TRAJ (SXGE0)

TIME = 170.3

5 1 0 5 .100+001

-SHOCK LAYER GAS PROPERTIES-

UTNF (FT/SEC)	RINF (SLUG/FT**2)	H10IAL (FT**2/SEC**2)	TO (OK)	PO (ATM)
2.5643+004	1.5200+008	3.7981+008	5.8325+003	4.5020+003

RZR	RE	VO (FT/SFC)	(W*UTINF) LB/FT**2-SFC	P (FT)
4.9872+002	7.2594+004	-1.7879+003	1.2560+002	7.5000+001

-SPECIES MASS FRACTIONS-

O2	H2	O	N
2.8593+006	2.0481+001	2.2117+001	5.6914+001

O*	N*	F-
6.2068+005	2.1724+004	1.0657+004

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
1.4452+006	1.1831+001	2.2757+001	6.5757+001

O*	N*	F-
6.2744+005	2.5098+004	3.1372+004

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.SPINF*UINF3 (WATTS/CM**2)
.1798+003	.4971+004	.4672+002	.4672+002	.2486+004	.2360+000	.1880+003
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.5809+001	.4971+004	.4117+002	.4117+002	.2486+004	.2360+000	.1657+003

QPR

.1000+001

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BOEING LIFTING BRAKE TRAJ (5XGEO)

TIME = 180.0

5 1 0 5 .100+001

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	RINF (SLUG/FT**3)	HTOTAL (FT**2/SEC**2)	TD (OK)	PD (ATM)
2.5437+004	1.1600-008	1.2352+008	5.5290+003	1.3715-003

RZR	RF	VD (FT/SEC)	(R*U)INF LB/FT**2-SFC	R (FT)
4.9511-002	5.6196+004	-1.2594+003	9.4936-003	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	H
2.6397-006	2.1842-001	2.2113-001	5.5556-001

O*	N*	E-
5.3201-005	1.8620-004	9.1349-009

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
1.3423-006	1.2718-001	2.2537-001	6.4696-001

O*	N*	E-
5.4209-005	2.1684-004	2.7105-004

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.5PINF*UINF3 (WATTS/CM**2)
.1791+003	.3989-004	.2780-002	.2780-002	.1994-004	.2351+000	.1394+003
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.5977+001	.3989-004	.2450-002	.2450-002	.1994-004	.2351+000	.1228+003

OPR

.1000+001

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BOEING LIFTING BRAKE TRAJ (SXGLD)

TIME = 190.0

5 1 0 5 .100+001

-SHOCK LAYER GAS PROPERTIES-

UTNF (FT/SEC)	RINF (SLUG/FT**2)	H1OTAL (FT**2/SEC**2)	TD (OK)	PD (ATM)
2.5249+004	8.7400-009	3.1876+008	5.4366+003	2.5038-003

R2H	RE	VO (FT/SEC)	(R+UTNF LB/FT**2-SFC	R (FT)
4.9147-002	4.2948+004	-1.2409+003	7.1000-003	2.5070+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
2.3731-006	2.2723-001	2.2114-001	5.4677-001

O*	N*	F-
4.6857-005	1.6400-004	8.0453-009

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
1.2153-006	1.3299-001	2.2650-001	6.4003-001

O*	N*	F-
4.7992-005	1.9197-004	2.3996-004

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.5R1PF*UTNF3 (WATTS/CM**2)
.1784+003	.3305-004	.1697-002	.1697-002	.1652-004	.2342+000	.1027+003
(FT)		(RTU/FT2-SEC)	(RTU/FT2-SEC)			(RTU/FT2-SEC)
.5854+001	.3305-004	.1496-002	.1496-002	.1652-004	.2342+000	.9050+002

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.1000+001

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BOEING LIFTING BLAKE TRAJ (5XGE0)

TIME = 200.0

5 1 0 5 .100+001

-SHOCK LAYER GAS PROPERTIES-

UTNF (FT/SEC)	PINF (SLUG/FT**3)	HTOTAL (FT**2/SEC**2)	TD (OK)	PD (ATM)
2.5119+004	6.4700-009	3.1548+008	5.3560+003	1.8351-003

RZB	RE	VD (FT/SEC)	(R*U)INF LB/FT**2-SEC	R (FT)
4.8829-002	3.2199+004	-1.2265+003	5.2289-003	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
2.0662-006	2.2945-001	2.2115-001	5.4457-001

O+	N+	F-
4.2716-005	1.4950-004	7.3344-009

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
1.0595-006	1.3447-001	2.2680-001	6.3829-001

O+	N+	F-
4.3809-005	1.7523-004	2.1904-004

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CH _R	DELTA/R	.5RINF*UINF3 (WATTS/CM**2)
.1778+003	.2856-004	.1069-002	.1069-002	.1428-004	.2334+000	.7486+002
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.5834+001	.2856-004	.9422-003	.9422-003	.1428-004	.2334+000	.6597+002

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.1000+001

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BOEING LIFTING BRACE TRAJ (5XGE0)
5 1 0 5 .100+001

TIME = 210.0

-SHOCK LAYER GAS PROPERTIES-

UTNF (FT/SEC)	PINF (SLUG/FT**3)	RIDTAL (FT**2/SEC**2)	TD (OK)	PD (ATM)
2.5006+004	4.6800-009	3.1265+008	5.2869+003	1.3162-003

P2B	RF	VD (FT/SEC)	(H*U)INF LB/FT**2-SEC	R (FT)
4.8293-002	2.3773+004	-1.2076+003	3.7653-003	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
1.8087-006	2.3497-001	2.2115-001	5.3907-001

O*	N*	F-
3.8023-005	1.3308-004	6.5286-009

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
9.3051-007	1.3815-001	2.2755-001	6.3391-001

O*	N*	F-
3.9123-005	1.5649-004	1.9562-004

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.SRINF+UINF3 (WATTS/CM**2)
.1768+003	.2347-004	.6270-003	.6270-003	.1174-004	.2320+000	.5342+002
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.5801+001	.2347-004	.5525-003	.5525-003	.1174-004	.2320+000	.4708+002

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.1000+001

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BOEING LIFTING BRAKE TRAJ (5XGEO)
5 1 0 5 .100+001

TIME = 220.0

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	RINF (SLUG/FT**3)	HOTAL (FT**2/SEC**2)	TD (OK)	PD (ATM)
2.4931+004	3.3500-009	3.1078+008	5.1860+003	9.3713-004

RZR	RE	VD (FT/SFC)	(R*U)INF LB/FT**2-SFC	R (FT)
4.7663-002	1.7355+004	-1.1883+003	2.6871-003	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
1.5450-006	2.3629-001	2.2115-001	5.3775-001

O*	N*	F-
3.4592-005	1.2107-004	5.9195-009

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
7.9549-007	1.3904-001	2.2774-001	6.3286-001

O*	N*	F-
3.5621-005	1.4248-004	1.7811-004

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.5*INF*UINF3 (WATTS/CM**2)
.1756+003	.2018-004	.3824-003	.3824-003	.1009-004	.2304+000	.3790+002
(FT)		(RTU/FT2-SEC)	(RTU/FT2-SEC)			(RTU/FT2-SEC)
.5761+001	.2018-004	.3370-003	.3370-003	.1009-004	.2304+000	.3340+002

QRR

.1000+001

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BOEING LIFTING BRAKE TRAJ (5X600)
5 1 0 5 .100+001

TIME = 230.0

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	PINF (SLUG/FT**3)	HCTAL (FT**2/SEC**2)	YD (OK)	PD (ATM)
2.4874+004	2.4000+009	3.0936+008	5.1097+003	6.6867+004

R2B	RE	VD (FT/SEC)	TR*UINF LB/FT**2-SEC	P (FT)
4.7148+002	1.2683+004	-1.1724+003	1.9207+003	2.5070+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
1.3163+006	2.3662+001	2.2116+001	5.3743+001

O*	N*	F-
3.1668+005	1.1084+004	5.4375+009

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
6.7790+007	1.3927+001	2.2779+001	6.3767+001

O*	N*	F-
3.2617+005	1.3047+004	1.6309+004

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.5RINF*UINF3 (WATTS/CM**2)
.1746+003	.1741+004	.2347+003	.2347+003	.8705+005	.2291+070	.2696+002
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.5728+001	.1741+004	.7069+003	.7069+003	.8705+005	.7291+000	.2376+002

OPR

.1000+001

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BOEING LIFTING BRAKE TRAJ (5XGE0)

TIME - 240.0

5 1 0 5 .100+001

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	PINF (SLUG/FT**2)	HTOTAL (FT**2/SEC**2)	YD (IN)	PD (ATM)
2.4831+004	1.7200-009	3.0829+008	5.0358+003	4.7783-004

RZB	RE	VD (FT/SEC)	IR*UINF LB/FT**2-SEC	P (FT)
4.6599-002	9.2832+003	-1.1571+003	1.3741-003	2.5070+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
1.1227-006	2.3697-001	2.2116-001	5.3710-001

O*	N*	F-
2.9005-005	1.0152-004	4.9803-009

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
5.7830-007	1.3950-001	2.2784-001	6.3736-001

O*	N*	F-
2.9881-005	1.1052-004	1.4941-004

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.SPINF*UINF3 (WATTS/CM**2)
.1735+003	.1516-004	.1458-003	.1458-003	.7582-005	.2277+000	.1922+002
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.5693+001	.1516-004	.1284-003	.1284-003	.7582-005	.2277+000	.1694+002

QRR

.1000+001

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BOEING LIFTING BRAKE TRAJ (EXGEO)

TIME = 250.0

5 1 0 5 .100+001

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	RINF (SLUG/FT**3)	H10IAL (FT**2/SEC**2)	TD (OK)	PD (ATM)
2.4799+004	1.2300-009	3.0750+008	4.9857+003	3.4101-004

RZB	RF	VD (FT/SFC)	(R*UINF) LB/FT**2-SFC	P (FT)
4.6077-002	6.7758+003	-1.1477+003	9.8140-004	3.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
9.5584-007	2.3599-001	2.2116-001	5.3809-001

O*	N*	F-
2.6758-005	9.3653-005	4.5944-009

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
4.9207-007	1.3884-001	2.2771-001	6.3317-001

O*	N*	F-
2.7558-005	1.1020-004	1.3775-004

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.5RINF*UINF3 (WATTS/CM**2)
.1725+003	.7906-005	.5414-004	.5414-004	.3953-005	.7264+000	.1369+002
(FT)		(RTU/FT2-SEC)	(RTU/FT2-SEC)			(RTU/FT2-SEC)
.5659+001	.7906-005	.4771-004	.4771-004	.3953-005	.7264+000	.1207+002

QRR

.1000+001

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BOEING LIFTING BRAKE TRAJ (5XGE0)
5 1 0 5 .100+001

TIME = 260.0

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	PINF (SLUG/FT**3)	H1OTAL (FT**2/SEC**2)	TD (OK)	PD (ATM)
2.4773+004	8.7900-010	3.0685+008	4.8979+003	2.4332-004

RZR	RE	VD (FT/SEC)	(R*U)INF LB/FT**2-SFC	R (FT)
4.5559-002	4.9424+003	-1.1286+003	7.0060-004	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
8.1164-007	2.3471-001	2.2116-001	5.3937-001

O*	N*	F-
2.4729-005	8.6551-005	4.2467-009

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
4.1753-007	1.3790-001	2.2755-001	6.3421-001

O*	N*	F-
2.5442-005	1.0177-004	1.2721-004

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.5PINF*UINF3 (WATTS/CM**2)
.1715+003	.6927-005	.3379-004	.3379-004	.3464-005	.2250+000	.9756+001
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.5626+001	.6927-005	.2978-004	.2978-004	.3464-005	.2250+000	.8597+001

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.1000+001

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BOEING LIFTING BRAKE TRAJ (5XGE0)
5 1 0 5 .100+001

TIME = 270.0

-SHOCK LAYER GAS PROPERTIES-

UTNF (FT/SEC)	PINF (SLUG/FT**3)	H1OTAL (FT**2/SEC**2)	YD (OK)	PD (ATM)
2.4752+004	6.2200-010	3.0633+008	4.8303+003	1.7198-004

PZR	RE	VD (FT/SEC)	(R*U)INF LB/FT**2-SEC	R (FT)
4.5029-002	3.5722+003	-1.1145+003	4.9534-004	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
6.8804-007	2.3318-001	2.2117-001	5.4090-001

O*	N*	F-
2.2834-005	7.9918-005	3.9206-009

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
3.5363-007	1.3697-001	2.2735-001	6.3545-001

O*	N*	F-
2.3472-005	9.3867-005	1.1736-004

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/P	.50INF*UINF3 (WATTS/CM**2)
.1704+003	.6072-005	.2091-004	.2091-004	.1036-005	.2237+000	.6886+001
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.5591+001	.6072-005	.1842-004	.1842-004	.1036-005	.2237+000	.6068+001

QPR

.1000+001

ORIGINAL PAGE IS
OF POOR QUALITY

BOEING LIFTING BRAKE TRAJ (5XGE0)
5 1 0 5 .100+001

TIME = 240.0

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	RINF (SLUG/FT**3)	HITOTAL (FT**2/SEC**2)	TD (OK)	PD (ATM)
2.4735+004	4.4400+010	3.0591+008	4.7686+003	1.2266+004

RZR	RE	VD (FT/SEC)	(R*U)INF LB/FT**2-SEC	P (FT)
4.4571+002	2.5979+003	-1.1075+003	3.5335+004	2.5070+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
5.8092+007	2.3005+001	2.2117+001	5.4404+001

O*	N*	F-
2.1327+005	7.4646+005	3.6620+009

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
2.4803+007	1.3488+001	2.2693+001	6.3797+001

O*	N*	F-
2.1883+005	8.7533+005	1.0942+004

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/P	.5PINF+UINF3 (WATTS/CM**2)
.1695+003	.5416+005	.1328+004	.1328+004	.2708+005	.2225+000	.4905+001
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.5562+001	.5416+005	.1171+004	.1171+004	.2708+005	.2225+000	.4323+001

QPR

.1000+001

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OF POOR QUALITY

BOEING LIFTING BRAKE TRAJ (SXGEO)
5 1 0 5 .170+001

TIME = 200.0

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	RINF (SLUG/FT**3)	HTOTAL (FT**2/SEC**2)	TD (OK)	PD (ATM)
2.4720+004	1.1900+010	1.0554+008	4.7057+003	11.8067+005

RZR	RF	VO (FT/SEC)	(R*U)INF LB/FT**2-SEC	P (FT)
4.4032+002	1.9077+003	-1.0845+003	2.5371+004	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
4.9852+007	2.2985+001	2.2117+001	5.4425+001

O*	N*	F-
1.9633+005	6.8717+005	3.3711+009

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
2.5473+007	1.3475+001	2.2691+001	6.3814+001

O*	N*	F-
2.0143+005	8.0372+005	1.0071+004

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.5RINF*UINF3 (WATTS/CM**2)
.1684+003	.4746+005	.8347+005	.8347+005	.2373+005	.2211+000	.3518+001
(FT)		(RTU/FT2-SEC)	(RTU/FT2-SEC)			(RTU/FT2-SEC)
.5526+001	.4746+005	.7356+005	.7356+005	.2373+005	.2211+000	.3100+001

QPR

.1000+001

ORIGINAL PAGE 13
OF POOR QUALITY

BOEING LIFTING BRAKE TRAJ (5XGE0)

5 1 0 5 .100+001

TIME = 300.0

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	PINF (SLUG/FT**2)	HTOTAL (FT**2/SEC**2)	TD (OK)	PD (ATM)
2.4707+004	2.3100-010	3.0522+008	4.6495+003	6.3734-005

PZR	RE	VD (FT/SEC)	(R*U)INF LB/FT**2-SFC	R (FT)
4.3610-002	1.4061+003	-1.0775+003	1.8363-004	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
4.2024-007	2.2687-001	2.2117-001	5.4723-001

O*	N*	F-
1.8397-005	6.4391-005	3.1589-009

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
2.1423-007	1.3278-001	2.2652-001	6.4052-001

O*	N*	F-
1.8842-005	7.5369-005	9.4211-005

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.50INF+UINF3 (WATTS/CM**2)
.1676+003	.4268-005	.5428-005	.5428-005	.2134-005	.2199+000	.2543+001
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.5429+001	.4268-005	.4783-005	.4783-005	.2134-005	.2199+000	.2241+001

QRR

.1000+001

ORIGINAL PAGE IS
OF POOR QUALITY

BOEING LIFTING BRAKE TRAJ (EXCER)

TIME = 310.0

5 1 0 5 .100+001

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	RINF (SLUG/FT**3)	HOTAL (FT**2/SEC**2)	Y0 (OK)	P0 (ATM)
2.4605+004	1.7000-010	3.0402+008	4.5942+003	4.6882-005

RZR	RT	VO (FT/SEC)	(R+U)INF LB/FT**2-SEC	P (FT)
4.3331-002	1.0554+003	-1.0651+003	1.3507-004	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
3.6050-007	2.2649-001	2.2117-001	5.4762-001

O+	N+	F-
1.7064-005	5.9722-005	2.9299-009

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
1.8457-007	1.3252-001	2.2647-001	6.4084-001

O+	N+	F-
1.7472-005	6.9488-005	8.7760-005

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.5RINF*UINF3 (WATTS/CM**2)
.1666+003	.3796-005	.3548-005	.3548-005	.1698-005	.2187+000	.1869+001
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.5467+001	.3796-005	.3126-005	.3126-005	.1808-005	.2187+000	.1647+001

QPR

.1000+001

ORIGINAL PAGE IS
OF POOR QUALITY

BOEING LIFTING BRAKE TRAJ (5XGE0)
5 1 0 5 .100+001

TIME = 320.0

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	RINF (SLUG/FT**3)	HINFAL (FT**2/SEC**2)	YD (OZ)	PD (ATM)
2.4685+004	1.2200-010	3.0467+008	4.5396+003	3.3634-005

D2R	RE	VD (FT/SEC)	TR*UINF LB/FT**2-SFC	P (FT)
4.2659-002	7.7098+002	-1.0540+003	9.6884-005	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
3.6900-007	2.2309-001	2.2117-001	5.5102-001

O*	N*	F-
1.5999-005	5.5996-005	2.7477-009

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
1.5789-007	1.3028-001	2.2602-001	6.4354-001

O*	N*	F-
1.6349-005	6.5390-005	8.747-005

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/D	.SPINF*UINF3 (WATTS/CM**2)
.1657+003	.7629-006	.5110-006	.5110-006	.3815-006	.2174+000	.1340+001
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.5436+001	.7629-006	.4503-006	.4503-006	.3815-006	.2174+000	.1141+001

QPR

.1000+001

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BOEING LIFTING BRARF TRAJ (SXGE0)

TIME = 330.0

1 0 5 .100+001

-CHOCK LAYER GAS PROPERTIES-

UTNF (FT/SEC)	WINF (SLUG/FT**3)	H10YAL (FT**2/SEC**2)	YD (OK)	PD (ATM)
2.4673+004	8.9100+011	1.0438+008	4.4889+003	2.4550+005

RZR	RE	VD (FT/SEC)	TH*UJNF LB/FT**2-SFC	P (FT)
4.2259+002	5.7348+002	-1.8477+003	7.0730+005	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
2.5956+007	2.2161+001	2.2118+001	5.5250+001

O*	N*	F-
1.4907+005	5.2174+005	2.5596+009

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
1.3251+007	1.2930+001	2.2583+001	6.4472+001

O*	N*	F-
1.5221+005	6.0892+005	7.6103+005

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.50 INF*UJNF3 (WATTS/CM**2)
.1649+003	.6621+006	.3234+006	.3234+006	.3310+006	.2164+000	.9770+000
(FT)		(RTU/FT2-SEC)	(RTU/FT2-SEC)			(RTU/FT2-SEC)
.5409+001	.6621+006	.7850+006	.7850+006	.3310+006	.2164+000	.8609+000

QOR

.1000+001

ORIGINAL PAGE 15
OF POOR QUALITY

BOEING LIFTING BRAKE TRAJ (5XGEN)
5 1 0 5 .100+001

TIME = 340.0

-SHOCK LAYER GAS PROPERTIES-

UINF (FT/SEC)	RINF (SLUG/FT**3)	HTOTAL (FT**2/SEC**2)	TD (OK)	PD (ATM)
2.4662+004	6.6200-011	3.0411+008	4.4381+003	1.8232-005

P28	RE	VD (FT/SEC)	(R*U)INF LB/FT**2-SFC	R (FT)
4.1859-002	4.3348+002	-1.0323+003	5.2528-005	2.5070+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
2.3072-007	2.2021-001	2.2118-001	5.5391-001

O*	N*	F-
1.3946-005	4.8811-005	2.3146-009

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
1.1769-007	1.2838-001	2.2565-001	6.4583-001

O*	N*	F-
1.4228-005	5.6912-005	7.1140-005

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.SRINF*UINF3 (WATTS/CM**2)
.1640+003	.5803-006	.2103-006	.2103-006	.2901-006	.2153+000	.7249+000
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.5382+001	.5803-006	.1853-006	.1853-006	.2901-006	.2153+000	.6388+000

OPR

.1000+001

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OF POOR QUALITY

BOEING LIFTING BRANK TRAJ (5X600)

TIME = 350.0

5 1 0 5 .100+001

-SHOCK LAYER GAS PROPERTIES-

UTNF (FT/SEC)	PINF (SLUG/FT**3)	HTOTAL (FT**2/SEC**2)	TD (OK)	PD (ATM)
2.4652+004	4.9900-011	3.0386+008	4.3927+003	1.7737-005

RZB	RF	VD (FT/SEC)	TR*UTNF LB/FT**2-SEC	R (FT)
4.1484-002	3.3210+002	-1.0227+003	3.9576-005	2.5000+001

-SPECIES MASS FRACTIONS-

O2	N2	O	N
1.9570-007	2.1889-001	2.2118-001	5.5523-001

O+	N+	F-
1.3091-005	4.5817-005	2.2477-009

-SPECIES MOLE FRACTIONS-

O2	N2	O	N
9.9751-008	1.2751-001	2.2548-001	6.4688-001

O+	N+	F-
1.3345-005	5.3180-005	6.6725-005

-RADIATIVE FLUX PROPERTIES-

PATHLENGTH (CM)	GAMMA	ISOTHERMAL FLUX (WATTS/CM**2)	ACTUAL FLUX (WATTS/CM**2)	CHR	DELTA/R	.5RINF*UINF3 (WATTS/CM**2)
.1633+003	.5126 006	.1399-006	.1399-006	.2563-006	.2143+000	.5458+000
(FT)		(BTU/FT2-SEC)	(BTU/FT2-SEC)			(BTU/FT2-SEC)
.5357+001	.5126-006	.1233-006	.1233-006	.2563-006	.2143+000	.4809+000

QRR

.1000+001

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APPENDIX B

BRAKE FACE ENVIRONMENT

The brake front face environment is listed in this appendix. The environment listing is preceded by a table of the radiation factors for each body point followed by a listing of the reference radioactive flux history. Each environment page contains the combined convective and radiative environment for a body point. The equilibrium radiation temperature is consistent with the total heating rate for an emissivity of 0.8. Each column is labeled with dimensions.

RADIATION FACTORS

B.P. RF

0	1.000
20	.900
40	.800
60	.700
80	.590
85	.550
90	.510
91	.490
97	.300
99	.120
100	.052

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RADIATION ENVIRONMENT

TIME HEAT RATE

.4000+001	.3993-001
.1000+002	.8524-001
.1600+002	.1643+000
.2200+002	.3213+000
.2800+002	.6370+000
.3400+002	.1237+001
.4000+002	.2294+001
.4500+002	.3759+001
.5000+002	.5756+001
.5500+002	.8109+001
.6000+002	.1094+002
.6500+002	.1320+002
.7000+002	.1508+002
.7500+002	.1585+002
.8000+002	.1503+002
.8500+002	.1292+002
.9000+002	.9713+001
.9500+002	.6119+001
.1000+003	.3507+001
.1050+003	.1643+001
.1100+003	.7012+000
.1150+003	.2900+000
.1200+003	.1469+000
.1250+003	.8592-001
.1300+003	.5456-001
.1350+003	.3751-001
.1400+003	.2660-001
.1450+003	.1676-001
.1500+003	.1247-001
.1550+003	.9240-002
.1600+003	.6882-002
.1700+003	.4117-002
.1800+003	.2450-002
.1900+003	.1496-002
.2000+003	.9422-003
.2100+003	.5525-003
.2200+003	.3370-003
.2300+003	.2069-003
.2400+003	.1284-003
.2500+003	.4771-004
.2600+003	.2978-004
.2700+003	.1842-004
.2800+003	.1171-004
.2900+003	.7356-005
.3000+003	.4783-005
.3100+003	.3126-005
.3200+003	.4503-006
.3300+003	.2850-006
.3400+003	.1853-006
.3500+003	.1233-006
.3600+003	.7816-007

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BOEING LIFTING BRAKE TRAJ (5XGEQ) CONVECTIVE BRAKE ENV.

B.P. NO. 0

TIME SEC	ALT KFT	VEL FT/SEC	MACH NO	ANGLE ATTACK	REYNOLDS NO./FT	HEAT COEF LBM/SFT-S	REC ENTHALPY BTU/LBM	RAD EQUIL DEG F	CONV RATE BTU/SFT-S	RAD RATE BTU/SFT-S	TOT RATE BTU/SFT-S	HEAT LOAD BTU/SFT
4.0	389.0	34172.3	27.92	15.00	.447+001	.291-004	.235+005	710.9	.676+000	.399-001	.716+000	.000
10.0	373.5	34184.6	30.06	15.00	.941+001	.397-004	.235+005	815.0	.921+000	.852-001	.101+001	.517+001
16.0	358.9	34194.4	32.57	15.00	.207+002	.568-004	.234+005	942.8	.131+001	.164+000	.147+001	.126+002
22.0	345.2	34200.7	33.99	15.00	.424+002	.792-004	.234+005	1080.8	.182+001	.321+000	.215+001	.235+002
28.0	332.5	34202.4	35.50	15.00	.881+002	.110-003	.234+005	1236.2	.253+001	.637+000	.317+001	.394+002
34.0	321.1	34189.8	36.37	15.00	.169+003	.175-003	.236+005	1470.4	.405+001	.124+001	.529+001	.648+002
40.0	310.7	34158.5	37.22	15.00	.514+003	.203-003	.234+005	1606.6	.465+001	.229+001	.695+001	.101+003
45.0	302.6	34115.9	37.89	15.00	.517+003	.257-003	.233+005	1781.5	.565+001	.376+001	.961+001	.193+003
50.0	295.5	34038.4	38.49	15.00	.816+003	.318-003	.232+005	1955.0	.720+001	.576+001	.130+002	.199+003
55.0	289.0	33920.3	38.37	15.00	.117+004	.382-003	.230+005	2112.0	.856+001	.811+001	.167+002	.273+003
60.0	283.1	33775.1	36.21	15.00	.163+004	.454-003	.228+005	2265.1	.101+002	.109+002	.210+002	.368+003
65.0	278.2	33540.5	37.94	15.00	.212+004	.521-003	.225+005	2374.4	.114+002	.132+002	.246+002	.481+003
70.0	273.8	33245.1	37.63	15.00	.269+004	.577-003	.222+005	2455.0	.124+002	.151+002	.275+002	.612+003
75.0	270.1	32928.3	37.25	15.00	.328+004	.651-003	.217+005	2507.4	.137+002	.159+002	.295+002	.754+003
80.0	267.2	32514.5	36.78	15.00	.381+004	.700-003	.212+005	2503.8	.144+002	.150+002	.294+002	.901+003
85.0	264.7	32067.1	36.28	15.00	.432+004	.743-003	.206+005	2460.9	.148+002	.129+002	.277+002	.104+004
90.0	263.0	31562.6	35.71	15.00	.469+004	.771-003	.200+005	2375.7	.149+002	.971+001	.246+002	.118+004
95.0	261.9	31040.6	35.06	15.00	.487+004	.780-003	.193+005	2254.6	.146+002	.612+001	.207+002	.129+004
100.0	261.3	30506.8	34.38	15.00	.492+004	.779-003	.187+005	2147.3	.141+002	.351+001	.176+002	.138+004
105.0	260.7	29973.1	33.71	15.00	.496+004	.774-003	.180+005	2050.2	.135+002	.164+001	.151+002	.147+004
110.0	260.6	29533.8	33.12	15.00	.490+004	.761-003	.174+005	1980.5	.128+002	.701+000	.135+002	.154+004
115.0	261.0	28963.5	32.61	15.00	.472+004	.739-003	.168+005	1923.6	.120+002	.290+000	.123+002	.160+004
120.0	261.7	28487.1	32.14	15.00	.452+004	.718-003	.163+005	1882.0	.113+002	.147+000	.115+002	.166+004
125.0	262.7	28063.2	31.75	15.00	.424+004	.689-003	.158+005	1837.0	.105+002	.859+001	.106+002	.172+004
130.0	263.9	27663.1	31.29	15.00	.391+004	.656-003	.154+005	1793.0	.976+001	.546+001	.981+001	.177+004
135.0	265.3	27298.9	30.88	15.00	.357+004	.583-003	.149+005	1709.0	.839+001	.375+001	.843+001	.181+004
140.0	266.9	26981.4	30.52	15.00	.322+004	.588-003	.146+005	1701.6	.829+001	.266+001	.831+001	.185+004
145.0	268.6	26686.3	30.19	15.00	.290+004	.554-003	.143+005	1658.1	.765+001	.168+001	.766+001	.189+004
150.0	270.5	26433.7	29.90	15.00	.258+004	.519-003	.140+005	1612.6	.701+001	.125+001	.703+001	.193+004
155.0	272.5	26208.9	29.65	15.00	.228+004	.485-003	.138+005	1570.4	.646+001	.924+002	.647+001	.197+004
160.0	274.6	26002.8	29.42	15.00	.202+004	.453-003	.136+005	1528.8	.595+001	.688+002	.596+001	.200+004
170.0	279.1	25682.6	29.05	15.00	.154+004	.393-003	.132+005	1445.1	.501+001	.912+002	.502+001	.205+004
180.0	283.9	25436.6	28.78	15.00	.117+004	.338-003	.130+005	1368.0	.425+001	.245+002	.425+001	.210+004
190.0	289.0	25249.3	28.56	15.00	.871+003	.291-003	.128+005	1294.3	.361+001	.150+002	.361+001	.214+004
200.0	294.4	25119.0	28.42	15.00	.642+003	.250-003	.127+005	1226.0	.308+001	.942+003	.308+001	.217+004
210.0	299.8	25006.2	27.97	15.00	.453+003	.213-003	.126+005	1157.1	.260+001	.553+003	.260+001	.220+004
220.0	305.5	24930.7	27.50	15.00	.315+003	.179-003	.125+005	1085.6	.217+001	.337+003	.217+001	.222+004
230.0	311.3	24874.0	27.06	15.00	.220+003	.152-003	.124+005	1021.1	.183+001	.207+003	.183+001	.224+004
240.0	317.3	24830.9	26.64	15.00	.154+003	.128-003	.124+005	959.2	.154+001	.128+003	.154+001	.226+004
250.0	323.5	24798.8	26.24	15.00	.107+003	.108-003	.124+005	900.6	.130+001	.477+004	.130+001	.227+004
260.0	329.7	24773.1	25.97	15.00	.754+002	.911-004	.123+005	841.6	.109+001	.298+004	.109+001	.229+004
270.0	336.2	24752.3	25.36	15.00	.512+002	.766-004	.123+005	786.7	.920+000	.184+004	.920+000	.230+004
280.0	342.7	24734.8	24.79	15.00	.352+002	.645-004	.123+005	734.5	.775+000	.117+004	.775+000	.230+004
290.0	349.4	24720.1	24.24	15.00	.244+002	.548-004	.123+005	687.1	.659+000	.736+005	.659+000	.231+004
300.0	356.2	24707.0	23.72	15.00	.171+002	.470-004	.123+005	644.1	.566+000	.478+005	.566+000	.232+004
310.0	363.2	24694.8	22.95	15.00	.120+002	.404-004	.123+005	603.4	.487+000	.313+005	.487+000	.232+004
320.0	370.2	24683.3	22.07	15.00	.806+001	.342-004	.123+005	560.2	.412+000	.450+006	.413+000	.233+004
330.0	377.4	24672.6	21.27	15.00	.555+001	.290-004	.123+005	519.2	.350+000	.285+006	.350+000	.233+004
340.0	384.8	24662.1	20.53	15.00	.390+001	.249-004	.123+005	482.7	.301+000	.185+006	.301+000	.233+004
350.0	392.2	24651.8	19.86	15.00	.281+001	.215-004	.123+005	448.9	.260+000	.123+006	.260+000	.234+004
360.0	399.7	24641.6	18.79	15.00	.189+001	.181-004	.123+005	410.8	.219+000	.782+007	.219+000	.234+004

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BOEING LIFTING BRAKE TRAJ (SXGE01 CONVECTIVE BRAKE ENV.

B.P. NO. 20

TIME SEC	ALT KFT	VEL FT/SEC	MACH NO	ANGLE ATTACK	REYNOLDS NO./FT	HEAT COEF LBH/SFT-S	REC ENTHALPY BTU/LBM	RAD EQUIL DEG F	CONV RATE BTU/SFT-S	RAD RATE BTU/SFT-S	TOT RATE BTU/SFT-S	HEAT LOAD BTU/SFT
4.0	389.0	34172.3	27.92	15.00	.447+001	.305-004	.235+005	722.4	.708+000	.359-001	.744+000	.000
10.0	373.5	34184.6	30.06	15.00	.941+001	.417-004	.235+005	826.8	.967+000	.767-001	.104+001	.537+001
16.0	358.9	34194.4	32.57	15.00	.207+002	.595-004	.234+005	953.6	.137+001	.148+000	.152+001	.131+002
22.0	345.2	34200.7	33.99	15.00	.424+002	.830-004	.234+005	1090.6	.191+001	.289+000	.220+001	.242+002
28.0	332.5	34202.4	35.50	15.00	.081+002	.115-003	.234+005	1245.0	.265+001	.573+000	.322+001	.405+002
34.0	321.1	34189.8	36.37	15.00	.169+003	.183-003	.234+005	1476.0	.424+001	.111+001	.535+001	.662+002
40.0	310.7	34158.5	37.22	15.00	.314+003	.213-003	.234+005	1606.6	.488+001	.206+001	.695+001	.103+003
45.0	302.6	34115.9	37.89	15.00	.517+003	.270-003	.233+005	1776.8	.615+001	.358+001	.953+001	.144+003
50.0	295.5	34038.4	38.49	15.00	.816+003	.333-003	.232+005	1944.0	.754+001	.518+001	.127+002	.200+003
55.0	289.0	33920.3	38.37	15.00	.117+004	.401-003	.230+005	2097.1	.898+001	.730+001	.163+002	.272+003
60.0	283.1	33775.1	38.21	15.00	.163+004	.476-003	.228+005	2245.3	.106+002	.985+001	.204+002	.364+003
65.0	278.2	33540.5	37.94	15.00	.212+004	.546-003	.225+005	2351.9	.119+002	.119+002	.238+002	.475+003
70.0	273.8	33265.1	37.63	15.00	.269+004	.605-003	.222+005	2430.8	.130+002	.136+002	.266+002	.601+003
75.0	270.1	32928.3	37.25	15.00	.328+004	.682-003	.217+005	2483.7	.143+002	.143+002	.286+002	.739+003
80.0	267.2	32514.5	36.78	15.00	.381+004	.734-003	.212+005	2485.4	.151+002	.135+002	.286+002	.882+003
85.0	264.7	32067.1	36.28	15.00	.432+004	.774-003	.206+005	2445.7	.155+002	.116+002	.271+002	.102+004
90.0	263.0	31562.6	35.71	15.00	.469+004	.808-003	.200+005	2368.3	.156+002	.074+001	.244+002	.115+004
95.0	261.9	31040.6	35.06	15.00	.487+004	.818-003	.193+005	2257.7	.153+002	.551+001	.208+002	.126+004
100.0	261.3	30506.8	34.38	15.00	.492+004	.817-003	.187+005	2159.6	.148+002	.316+001	.179+002	.136+004
105.0	260.7	29973.1	33.71	15.00	.496+004	.811-003	.180+005	2068.8	.141+002	.148+001	.156+002	.144+004
110.0	260.6	29453.8	33.12	15.00	.490+004	.798-003	.174+005	2004.9	.134+002	.631+000	.141+002	.152+004
115.0	261.0	28963.5	32.61	15.00	.472+004	.775-003	.168+005	1949.9	.126+002	.261+000	.128+002	.158+004
120.0	261.7	28487.1	32.14	15.00	.452+004	.753-003	.163+005	1908.7	.119+002	.132+000	.120+002	.165+004
125.0	262.7	28063.2	31.75	15.00	.424+004	.722-003	.158+005	1863.2	.110+002	.773-001	.111+002	.170+004
130.0	263.9	27663.1	31.29	15.00	.391+004	.688-003	.154+005	1819.3	.102+002	.491-001	.103+002	.176+004
135.0	265.3	27298.9	30.88	15.00	.357+004	.612-003	.149+005	1734.9	.880+001	.338-001	.884+001	.181+004
140.0	266.9	26981.4	30.52	15.00	.322+004	.617-003	.146+005	1727.3	.869+001	.239-001	.872+001	.185+004
145.0	268.6	26686.3	30.19	15.00	.290+004	.580-003	.143+005	1682.1	.800+001	.151-001	.802+001	.189+004
150.0	270.5	26433.7	29.90	15.00	.258+004	.544-003	.140+005	1636.8	.735+001	.112-001	.736+001	.193+004
155.0	272.5	26208.9	29.65	15.00	.228+004	.509-003	.138+005	1594.7	.678+001	.832-002	.679+001	.196+004
160.0	274.6	26002.8	29.42	15.00	.202+004	.475-003	.136+005	1552.2	.624+001	.619-002	.624+001	.200+004
170.0	279.1	25682.6	29.05	15.00	.154+004	.412-003	.132+005	1467.5	.525+001	.371-002	.526+001	.206+004
180.0	283.9	25436.6	28.78	15.00	.117+004	.354-003	.130+005	1389.0	.445+001	.220-002	.445+001	.210+004
190.0	289.0	25249.3	28.56	15.00	.071+003	.306-003	.128+005	1316.3	.379+001	.135-002	.379+001	.214+004
200.0	294.4	25119.0	28.42	15.00	.642+003	.262-003	.127+005	1245.7	.322+001	.848-003	.322+001	.218+004
210.0	299.8	25006.2	27.97	15.00	.453+003	.223-003	.126+005	1175.6	.272+001	.497-003	.272+001	.221+004
220.0	305.5	24930.7	27.50	15.00	.315+003	.188-003	.125+005	1104.5	.228+001	.303-003	.228+001	.223+004
230.0	311.3	24874.0	27.06	15.00	.220+003	.159-003	.124+005	1037.7	.192+001	.186-003	.192+001	.226+004
240.0	317.3	24830.9	26.64	15.00	.154+003	.134-003	.124+005	975.4	.162+001	.116-003	.162+001	.227+004
250.0	323.5	24798.8	26.24	15.00	.107+003	.113-003	.124+005	915.9	.136+001	.429-004	.136+001	.229+004
260.0	329.7	24773.1	25.97	15.00	.754+002	.955-004	.123+005	856.9	.115+001	.268-004	.115+001	.230+004
270.0	336.2	24752.3	25.36	15.00	.512+002	.803-004	.123+005	801.4	.964+000	.166-004	.964+000	.231+004
280.0	342.7	24734.8	24.79	15.00	.352+002	.677-004	.123+005	749.0	.814+000	.105-004	.814+000	.232+004
290.0	349.4	24720.1	24.24	15.00	.244+002	.575-004	.123+005	700.9	.692+000	.662-005	.692+000	.233+004
300.0	356.2	24707.0	23.72	15.00	.171+002	.493-004	.123+005	657.3	.593+000	.430-005	.594+000	.233+004
310.0	363.2	24694.8	22.95	15.00	.120+002	.424-004	.123+005	616.2	.511+000	.281-005	.511+000	.234+004
320.0	370.2	24683.3	22.07	15.00	.086+001	.358-004	.123+005	571.9	.432+000	.405-006	.432+000	.234+004
330.0	377.4	24672.6	21.27	15.00	.555+001	.304-004	.123+005	530.7	.367+000	.256-006	.367+000	.235+004
340.0	384.8	24662.1	20.53	15.00	.390+001	.261-004	.123+005	493.8	.315+000	.167-006	.315+000	.235+004
350.0	392.2	24651.8	19.86	15.00	.281+001	.225-004	.123+005	459.2	.272+000	.111-006	.272+000	.235+004
360.0	399.7	24641.6	18.79	15.00	.189+001	.190-004	.123+005	421.4	.230+000	.703-007	.230+000	.236+004

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BOEING LIFTING BRAKE TRAJ (5XGE0) CONVECTIVE BRAKE ENV.

B.P. NO. 90

TIME SEC	ALT KFT	VEL FT/SEC	MACH NO	ANGLE ATTACK	REYNOLDS NO./FT	HEAT COEF LBM/SFT-S	REC ENTHALPY BTU/LBM	RAD EQUIL DEG F	CONV RATE BTU/SFT-S	RAD RATE BTU/SFT-S	TOT RATE BTU/SFT-S	HEAT LOAD BTU/SFT
4.0	389.0	34172.3	27.92	15.00	.447+001	.338-004	.235+005	750.1	.785+000	.319-001	.817+000	.600
10.0	373.5	34184.6	30.06	15.00	.241+001	.462-004	.235+005	855.3	.107+001	.682-001	.115+001	.587+001
16.0	358.9	34194.4	32.57	15.00	.207+002	.659-004	.234+005	983.0	.152+001	.131+000	.165+001	.142+002
22.0	345.2	34200.7	33.99	15.00	.424+002	.920-004	.234+005	1120.4	.212+001	.257+000	.238+001	.263+002
28.0	332.5	34202.4	35.50	15.00	.881+002	.128-003	.234+005	1275.3	.294+001	.510+000	.345+001	.438+002
34.0	321.1	34189.8	36.37	15.00	.165+003	.203-003	.236+005	1505.8	.470+001	.990+000	.569+001	.712+002
40.0	310.7	34158.5	37.22	15.00	.314+003	.236-003	.234+005	1628.3	.541+001	.184+001	.724+001	.110+003
45.0	302.6	34115.9	37.89	15.00	.517+003	.299-003	.233+005	1793.3	.681+001	.301+001	.982+001	.153+003
50.0	295.5	34038.4	38.49	15.00	.816+003	.369-003	.232+005	1955.2	.835+001	.460+001	.139+002	.210+003
55.0	289.0	33920.3	38.37	15.00	.117+004	.444-003	.230+005	2103.0	.995+001	.649+001	.164+002	.283+003
60.0	283.1	33775.1	38.21	15.00	.163+004	.527-003	.228+005	2246.5	.117+002	.875+001	.204+002	.375+003
65.0	278.2	33540.5	37.94	15.00	.212+004	.605-003	.225+005	2351.0	.132+002	.106+002	.238+002	.486+003
70.0	273.8	33265.1	37.63	15.00	.269+004	.670-003	.222+005	2427.9	.144+002	.121+002	.265+002	.611+003
75.0	270.1	32928.3	37.25	15.00	.328+004	.756-003	.217+005	2482.9	.159+002	.127+002	.286+002	.749+003
80.0	267.2	32514.5	36.78	15.00	.381+004	.813-003	.212+005	2486.4	.167+002	.126+002	.287+002	.892+003
85.0	264.7	32067.1	36.28	15.00	.432+004	.863-003	.206+005	2455.8	.172+002	.103+002	.275+002	.103+004
90.0	263.0	31562.6	35.71	15.00	.469+004	.895-003	.200+005	2388.6	.173+002	.777+001	.251+002	.116+004
95.0	261.9	31040.6	35.06	15.00	.487+004	.906-003	.193+005	2290.6	.169+002	.490+001	.218+002	.128+004
100.0	261.3	30506.8	34.38	15.00	.492+004	.904+003	.187+005	2202.9	.163+002	.281+001	.191+002	.138+004
105.0	260.7	29973.1	33.71	15.00	.496+004	.899-003	.180+005	2123.1	.156+002	.131+001	.170+002	.147+004
110.0	260.4	29453.8	33.12	15.00	.490+004	.884+003	.174+005	2062.6	.149+002	.561+000	.154+002	.155+004
115.0	261.0	28963.5	32.61	15.00	.472+004	.859-003	.168+005	2009.7	.139+002	.232+000	.142+002	.163+004
120.0	261.7	28487.1	32.14	15.00	.452+004	.834+003	.163+005	1968.2	.131+002	.118+000	.132+002	.170+004
125.0	262.7	28063.2	31.75	15.00	.424+004	.800+003	.158+005	1922.2	.122+002	.687+001	.123+002	.176+004
130.0	263.9	27663.1	31.29	15.00	.391+004	.762+003	.154+005	1877.1	.113+002	.436+001	.114+002	.182+004
135.0	265.3	27298.9	30.88	15.00	.357+004	.677+003	.149+005	1790.1	.973+001	.300+001	.976+001	.187+004
140.0	266.9	26981.4	30.52	15.00	.322+004	.683+003	.146+005	1782.8	.961+001	.213+001	.963+001	.192+004
145.0	268.6	26686.3	30.19	15.00	.290+004	.643+003	.143+005	1737.4	.886+001	.134+001	.888+001	.197+004
150.0	270.5	26433.7	29.90	15.00	.258+004	.603+003	.140+005	1690.8	.814+001	.998+002	.815+001	.201+004
155.0	272.5	26208.9	29.65	15.00	.228+004	.564+003	.138+005	1647.5	.751+001	.739+002	.751+001	.205+004
160.0	274.6	26002.8	29.42	15.00	.202+004	.527+003	.136+005	1604.5	.691+001	.551+002	.692+001	.209+004
170.0	279.1	25682.6	29.05	15.00	.154+004	.456+003	.132+005	1516.5	.581+001	.329+002	.581+001	.215+004
180.0	283.9	25436.6	28.78	15.00	.117+004	.393+003	.130+005	1437.5	.493+001	.196+002	.494+001	.220+004
190.0	289.0	25249.3	28.56	15.00	.871+003	.338+003	.128+005	1360.6	.418+001	.120+002	.418+001	.225+004
200.0	294.4	25119.0	28.42	15.00	.642+003	.291+003	.127+005	1290.7	.358+001	.754+003	.358+001	.229+004
210.0	299.8	25006.2	27.97	15.00	.453+003	.247+003	.126+005	1217.5	.302+001	.442+003	.302+001	.232+004
220.0	305.5	24930.7	27.50	15.00	.315+003	.208+003	.125+005	1144.2	.252+001	.270+003	.252+001	.235+004
230.0	311.3	24874.0	27.06	15.00	.220+003	.176+003	.124+005	1075.9	.212+001	.166+003	.212+001	.237+004
240.0	317.3	24830.9	26.64	15.00	.154+003	.149+003	.124+005	1013.7	.180+001	.103+003	.180+001	.239+004
250.0	323.5	24798.8	26.24	15.00	.107+003	.125+003	.124+005	950.9	.151+001	.382+004	.151+001	.241+004
260.0	329.7	24773.1	25.97	15.00	.754+002	.106+003	.123+005	891.5	.127+001	.238+004	.127+001	.242+004
270.0	336.2	24752.3	25.36	15.00	.512+002	.889+004	.123+005	833.7	.107+001	.147+004	.107+001	.243+004
280.0	342.7	24734.8	24.79	15.00	.352+002	.749+004	.123+005	779.7	.900+000	.937+005	.900+000	.244+004
290.0	349.4	24720.1	24.24	15.00	.244+002	.637+004	.123+005	730.8	.766+000	.588+005	.766+000	.245+004
300.0	356.2	24707.0	23.72	15.00	.171+002	.546+004	.123+005	686.1	.657+000	.383+005	.657+000	.246+004
310.0	363.2	24694.8	22.95	15.00	.120+002	.470+004	.123+005	644.1	.566+000	.250+005	.566+000	.246+004
320.0	370.2	24683.3	22.07	15.00	.806+001	.397+004	.123+005	598.7	.478+000	.360+006	.478+000	.247+004
330.0	377.4	24672.6	21.27	15.00	.555+001	.337+004	.123+005	556.5	.406+000	.228+006	.406+000	.247+004
340.0	384.8	24662.1	20.53	15.00	.390+001	.289+004	.123+005	518.3	.349+000	.148+006	.349+000	.248+004
350.0	392.2	24651.8	19.86	15.00	.281+001	.249+004	.123+005	482.7	.301+000	.986+007	.301+000	.248+004
360.0	399.7	24641.6	18.79	15.00	.189+001	.211+004	.123+005	444.7	.255+000	.625+007	.255+000	.248+004

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BOEING LIFTING BRAKE TRAJ (5XGEO) CONVECTIVE BRAKE ENV.

B.P. NO. 60

TIME SEC	ALT MFT	VEL FT/SEC	MACH NO	ANGLE ATTACK	REYNOLDS NO./FT	HEAT COEF LBM/SFT-S	REC BTU/LBM	ENTHALPY DEG F	RAD EQUIV BTU/SFT-S	CONV RATE BTU/SFT-S	RAD RATE BTU/SFT-S	TOT RATE BTU/SFT-S	HEAT LOAD BTU/SFT
4.0	389.0	34172.3	27.92	15.00	.447+001	.376-004	.235+005	780.1	.873+000	.280+001	.901+000	.000	
10.0	773.5	34184.6	30.06	15.00	.941+001	.513-004	.235+005	885.8	.119+001	.597+001	.125+001	.645+001	
16.0	358.9	34194.4	32.57	15.00	.207+002	.732-004	.234+005	1015.0	.169+001	.115+000	.180+001	.156+002	
22.0	345.2	34200.7	33.99	15.00	.024+002	.102-003	.234+005	1152.3	.235+001	.225+000	.257+001	.287+002	
28.0	332.5	34202.4	35.50	15.00	.881+002	.142-003	.234+005	1306.7	.326+001	.446+000	.371+001	.476+002	
34.0	321.1	34189.8	36.37	15.00	.169+003	.226-003	.236+005	1540.1	.523+001	.866+000	.609+001	.770+002	
40.0	310.7	34158.5	37.22	15.00	.314+003	.262-003	.234+005	1654.1	.600+001	.161+001	.761+001	.118+003	
45.0	302.6	34115.9	37.89	15.00	.517+003	.332-003	.233+005	1814.4	.756+001	.263+001	.102+002	.163+003	
50.0	295.5	34038.4	38.49	15.00	.816+003	.410-003	.232+005	1971.4	.928+001	.403+001	.133+002	.221+003	
55.0	289.0	33920.3	38.37	15.00	.117+004	.493-003	.230+005	2114.1	.110+002	.568+001	.167+002	.296+003	
60.0	283.1	33775.1	38.21	15.00	.163+004	.586-003	.228+005	2253.6	.130+002	.766+001	.206+002	.390+003	
65.0	278.2	33540.5	37.94	15.00	.212+004	.672-003	.225+005	2355.2	.147+002	.924+001	.239+002	.501+003	
70.0	273.8	33265.1	37.63	15.00	.269+004	.745-003	.222+005	2430.7	.160+002	.106+002	.266+002	.627+003	
75.0	270.1	32928.3	37.25	15.00	.328+004	.839-003	.217+005	2487.0	.176+002	.111+002	.287+002	.766+003	
80.0	267.2	32514.5	36.78	15.00	.381+004	.904-003	.212+005	2495.6	.185+002	.105+002	.291+002	.910+003	
85.0	264.7	32067.1	36.28	15.00	.432+004	.959-003	.206+005	2472.0	.191+002	.904+001	.281+002	.105+004	
90.0	263.0	31562.6	35.71	15.00	.469+004	.994-003	.200+005	2414.8	.192+002	.680+001	.260+002	.119+004	
95.0	261.9	31040.6	35.06	15.00	.487+004	.101-002	.193+005	2331.3	.188+002	.428+001	.231+002	.131+004	
100.0	261.3	30506.8	34.38	15.00	.492+004	.100-002	.187+005	2249.4	.181+002	.245+001	.205+002	.142+004	
105.0	260.7	29973.1	33.71	15.00	.496+004	.999-003	.180+005	2180.6	.174+002	.115+001	.185+002	.152+004	
110.0	260.6	29453.8	33.12	15.00	.490+004	.982-003	.174+005	2124.2	.165+002	.491+000	.170+002	.161+004	
115.0	261.0	28963.5	32.61	15.00	.472+004	.954-003	.168+005	2072.5	.155+002	.203+000	.157+002	.169+004	
120.0	261.7	28487.1	32.14	15.00	.452+004	.927-003	.163+005	2031.4	.146+002	.103+000	.147+002	.176+004	
125.0	262.7	28063.2	31.75	15.00	.424+004	.889-003	.158+005	1984.5	.135+002	.601+001	.136+002	.183+004	
130.0	263.9	27663.1	31.29	15.00	.391+004	.846-003	.154+005	1938.0	.126+002	.382+001	.126+002	.190+004	
135.0	265.3	27298.9	30.88	15.00	.357+004	.753-003	.149+005	1849.8	.108+002	.263+001	.108+002	.196+004	
140.0	266.9	26981.4	30.52	15.00	.322+004	.759-003	.146+005	1841.9	.107+002	.186+001	.107+002	.201+004	
145.0	268.6	26686.3	30.19	15.00	.290+004	.714-003	.143+005	1794.9	.983+001	.117+001	.984+001	.206+004	
150.0	270.5	26433.7	29.90	15.00	.258+004	.670-003	.140+005	1747.5	.903+001	.873+002	.904+001	.211+004	
155.0	272.5	26208.9	29.65	15.00	.228+004	.626-003	.138+005	1702.6	.832+001	.647+002	.833+001	.215+004	
160.0	274.6	26002.8	29.42	15.00	.202+004	.585-003	.136+005	1658.5	.767+001	.482+002	.767+001	.219+004	
170.0	279.1	25682.6	29.05	15.00	.154+004	.507-003	.132+005	1569.1	.645+001	.288+002	.645+001	.227+004	
180.0	283.9	25436.6	28.78	15.00	.117+004	.436-003	.130+005	1486.9	.547+001	.172+002	.547+001	.233+004	
190.0	289.0	25249.3	28.56	15.00	.871+003	.376-003	.128+005	1409.3	.465+001	.105+002	.465+001	.238+004	
200.0	294.4	25119.0	28.42	15.00	.642+003	.323-003	.127+005	1336.6	.397+001	.660+003	.397+001	.242+004	
210.0	299.6	25006.2	27.97	15.00	.453+003	.274-003	.126+005	1261.2	.334+001	.387+003	.334+001	.246+004	
220.0	305.5	24930.7	27.50	15.00	.315+003	.232-003	.125+005	1188.3	.281+001	.236+003	.281+001	.249+004	
230.0	311.3	24874.0	27.06	15.00	.220+003	.196-003	.124+005	1117.5	.236+001	.145+003	.236+001	.251+004	
240.0	317.3	24830.9	26.64	15.00	.154+003	.165-003	.124+005	1051.5	.199+001	.899+004	.199+001	.253+004	
250.0	323.5	24798.8	26.24	15.00	.107+003	.139-003	.124+005	988.5	.168+001	.334+004	.168+001	.255+004	
260.0	329.7	24773.1	25.97	15.00	.754+002	.118-003	.123+005	927.9	.141+001	.208+004	.141+001	.257+004	
270.0	336.2	24752.3	25.36	15.00	.512+002	.988+004	.123+005	868.1	.118+001	.129+004	.118+001	.258+004	
280.0	342.7	24734.8	24.79	15.00	.352+002	.833+004	.123+005	812.9	.100+001	.820+005	.100+001	.259+004	
290.0	349.4	24720.1	24.24	15.00	.244+002	.708+004	.123+005	762.5	.851+000	.515+005	.851+000	.260+004	
300.0	356.2	24707.0	23.72	15.00	.171+002	.606+004	.123+005	716.2	.729+000	.335+005	.729+000	.261+004	
310.0	363.2	24694.8	22.95	15.00	.120+002	.522+004	.123+005	673.3	.628+000	.219+005	.628+000	.262+004	
320.0	370.2	24683.3	22.07	15.00	.806+001	.441+004	.123+005	626.8	.531+000	.315+006	.531+000	.262+004	
330.0	377.4	24672.6	21.27	15.00	.555+001	.374+004	.123+005	583.1	.451+000	.199+006	.451+000	.263+004	
340.0	384.8	24662.1	20.53	15.00	.390+001	.321+004	.123+005	544.2	.387+000	.130+006	.387+000	.263+004	
350.0	392.2	24651.8	19.86	15.00	.281+001	.277+004	.123+005	508.1	.334+000	.863+007	.334+000	.263+004	
360.0	399.7	24641.6	18.79	15.00	.189+001	.234+004	.123+005	468.3	.283+000	.547+007	.283+000	.264+004	

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BOEING LIFTING BRAKE TRAJ (5XGE0) CONVECTIVE BRAKE ENV.

B.P. NO. 80

TIME SEC	ALT KFT	VEL FT/SEC	MACH NO	ANGLE ATTACK	REYNOLDS NO./FT	HEAT COEF LBM/FT-S	REC ENTHALPY BTU/LBM	RAD EQUIL DEG F	CONV RATE BTU/FT-S	RAD RATE BTU/FT-S	TOT RATE BTU/FT-S	HEAT LOAD BTU/FT
4.0	389.0	34172.3	27.92	15.00	.447+001	.470-004	.235+003	847.7	.109+001	.236-001	.111+001	.000
10.0	373.5	34184.6	30.06	15.00	.291+001	.641-004	.235+005	957.0	.149+001	.503-001	.154+001	.795+001
16.0	358.9	34194.4	32.57	15.00	.207+002	.915-004	.234+005	1091.2	.211+001	.969-001	.220+001	.192+002
22.0	345.2	34200.7	33.99	15.00	.424+002	.128-003	.234+005	1233.8	.294+001	.190+000	.313+001	.352+002
28.0	332.5	34202.4	35.50	15.00	.881+002	.178-003	.234+005	1390.4	.409+001	.376+000	.446+001	.580+002
34.0	321.1	34189.8	36.37	15.00	.169+003	.282-003	.236+005	1628.7	.652+001	.730+000	.725+001	.931+002
40.0	310.7	34158.5	37.22	15.00	.314+003	.328-003	.234+005	1736.3	.751+001	.135+001	.886+001	.141+003
45.0	302.6	34115.9	37.89	15.00	.517+003	.415-003	.233+005	1892.3	.944+001	.222+001	.117+002	.193+003
50.0	295.5	34038.4	38.49	15.00	.816+003	.513-003	.232+005	2045.1	.116+002	.340+001	.150+002	.259+003
55.0	289.0	33920.3	38.37	15.00	.117+004	.616-003	.230+005	2182.6	.138+002	.478+001	.166+002	.343+003
60.0	283.1	33775.1	38.21	15.00	.163+004	.732-003	.228+005	2317.7	.162+002	.645+001	.227+002	.446+003
65.0	278.2	33540.5	37.94	15.00	.212+004	.840-003	.225+005	2417.9	.183+002	.779+001	.261+002	.568+003
70.0	273.8	33265.1	37.63	15.00	.269+004	.931-003	.222+005	2492.1	.200+002	.890+001	.289+002	.706+003
75.0	270.1	32920.3	37.25	15.00	.328+004	.105-002	.217+005	2553.3	.220+002	.935+001	.314+002	.857+003
80.0	267.2	32514.5	36.78	15.00	.381+004	.113-002	.212+005	2568.2	.232+002	.887+001	.320+002	.102+004
85.0	264.7	32067.1	36.28	15.00	.432+004	.120-002	.206+005	2555.7	.239+002	.762+001	.315+002	.117+004
90.0	263.0	31562.6	35.71	15.00	.469+004	.124-002	.200+005	2511.0	.239+002	.573+001	.297+002	.133+004
95.0	261.9	31040.6	35.06	15.00	.487+004	.126-002	.193+005	2443.7	.235+002	.361+001	.271+002	.147+004
100.0	261.3	30506.8	34.38	15.00	.492+004	.126-002	.187+005	2380.6	.227+002	.207+001	.248+002	.160+004
105.0	260.7	29973.1	33.71	15.00	.496+004	.125-002	.180+005	2317.3	.217+002	.969+000	.227+002	.172+004
110.0	260.6	29453.8	33.12	15.00	.490+004	.123-002	.174+005	2266.1	.206+002	.414+000	.210+002	.183+004
115.0	261.0	28963.5	32.61	15.00	.472+004	.119-002	.168+005	2212.3	.192+002	.171+000	.194+002	.193+004
120.0	261.7	28487.1	32.14	15.00	.452+004	.116-002	.163+005	2172.2	.182+002	.867+001	.183+002	.202+004
125.0	262.7	28063.2	31.75	15.00	.424+004	.111-002	.158+005	2121.7	.169+002	.507+001	.169+002	.211+004
130.0	263.9	27663.1	31.29	15.00	.391+004	.106-002	.154+005	2075.1	.157+002	.322+001	.157+002	.219+004
135.0	265.3	27298.9	30.88	15.00	.357+004	.941-003	.149+005	1980.4	.135+002	.221+001	.135+002	.226+004
140.0	266.9	26814.4	30.52	15.00	.322+004	.948-003	.146+005	1971.8	.133+002	.157+001	.133+002	.233+004
145.0	268.6	26486.3	30.19	15.00	.290+004	.893-003	.143+005	1923.1	.123+002	.989+002	.123+002	.240+004
150.0	270.5	26433.7	29.90	15.00	.258+004	.837-003	.140+005	1872.3	.113+002	.736+002	.113+002	.245+004
155.0	272.5	26208.9	29.65	15.00	.228+004	.783-003	.138+005	1825.6	.104+002	.545+002	.104+002	.251+004
160.0	274.6	26002.8	29.42	15.00	.202+004	.731-003	.136+005	1778.6	.956+001	.406+002	.956+001	.256+004
170.0	279.1	25682.6	29.05	15.00	.154+004	.633-003	.132+005	1683.6	.804+001	.243+002	.804+001	.265+004
180.0	285.9	25436.6	28.78	15.00	.117+004	.545-003	.130+005	1597.5	.682+001	.145+002	.682+001	.272+004
190.0	289.0	25249.3	28.56	15.00	.871+003	.470-003	.128+005	1515.5	.580+001	.883+003	.580+001	.278+004
200.0	294.4	25119.0	28.42	15.00	.642+003	.404-003	.127+005	1439.0	.495+001	.556+003	.495+001	.284+004
210.0	299.8	25006.2	27.97	15.00	.453+003	.343-003	.126+005	1359.8	.418+001	.326+003	.418+001	.288+004
220.0	305.5	24930.7	27.50	15.00	.315+003	.289-003	.125+005	1280.6	.349+001	.199+003	.350+001	.292+004
230.0	311.3	24874.0	27.06	15.00	.220+003	.245-003	.124+005	1207.3	.294+001	.122+003	.294+001	.295+004
240.0	317.3	24830.9	26.64	15.00	.154+003	.207-003	.124+005	1139.0	.249+001	.758+004	.249+001	.298+004
250.0	323.5	24798.8	26.24	15.00	.107+003	.174-003	.124+005	1071.6	.210+001	.281+004	.210+001	.300+004
260.0	329.7	24773.1	25.97	15.00	.754+002	.147-003	.123+005	1005.8	.176+001	.176+004	.176+001	.302+004
270.0	336.2	24752.3	25.36	15.00	.512+002	.124-003	.123+005	945.1	.148+001	.109+004	.148+001	.304+004
280.0	342.7	24734.8	24.79	15.00	.352+002	.104-003	.123+005	885.1	.125+001	.691+005	.125+001	.305+004
290.0	349.4	24720.1	24.24	15.00	.244+002	.889-004	.123+005	831.9	.106+001	.434+005	.106+001	.306+004
300.0	356.2	24707.0	23.72	15.00	.171+002	.758-004	.123+005	783.4	.910+000	.282+005	.910+000	.307+004
310.0	363.2	24694.8	22.95	15.00	.120+002	.652-004	.123+005	737.7	.784+000	.184+005	.784+000	.308+004
320.0	370.2	24683.3	22.07	15.00	.806+001	.551-004	.123+005	688.7	.663+000	.266+006	.663+000	.309+004
330.0	377.4	24672.6	21.27	15.00	.555+001	.468-004	.123+005	643.0	.564+000	.168+006	.564+000	.310+004
340.0	384.8	24662.1	20.53	15.00	.390+001	.401-004	.123+005	601.4	.483+000	.109+006	.483+000	.310+004
350.0	392.2	24651.8	19.86	15.00	.281+001	.346-004	.123+005	563.1	.417+000	.727+007	.417+000	.311+004
360.0	399.7	24641.6	18.79	15.00	.189+001	.293-004	.123+005	521.7	.354+000	.461+007	.354+000	.311+004

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BOEING LIFTING BRAKE TRAJ (SXGE0) CONVECTIVE BRAKE ENV.

B.P. NO. 85

TIME SEC	ALT KFT	VEL FT/SEC	MACH NO	ANGLE ATTACK	REYNOLDS NO./FT	HEAT COEF LBH/SFT-S	REC ENTHALPY BTU/LBH	RAD EQUIV DEG F	CONV RATE BTU/SFT-S	RAD RATE BTU/SFT-S	TOT RATE BTU/SFT-S	HEAT LOAD BTU/SFT
4.0	389.0	34172.3	27.92	15.00	.447+001	.545-004	.235+005	895.5	.126+001	.220-001	.129+001	.000
10.0	373.5	34184.6	30.06	15.00	.941+001	.744-004	.235+005	1008.3	.172+001	.469-001	.177+001	.917+001
16.0	358.9	34194.4	32.57	15.00	.207+002	.106-003	.234+005	1149.6	.244+001	.904-001	.253+001	.221+002
22.0	345.2	34200.7	33.99	15.00	.424+002	.144-003	.234+005	1291.0	.340+001	.177+000	.358+001	.404+002
28.0	332.5	34202.4	35.50	15.00	.881+002	.206-003	.234+005	1451.0	.473+001	.350+000	.508+001	.664+002
34.0	321.1	34189.8	36.77	15.00	.169+003	.327-003	.236+005	1696.3	.755+001	.680+000	.823+001	.106+003
40.0	310.7	34158.5	37.22	15.00	.314+003	.381-003	.234+005	1802.3	.871+001	.126+001	.998+001	.161+003
45.0	302.6	34115.9	37.89	15.00	.517+003	.481-003	.233+005	1957.3	.109+002	.207+001	.130+002	.218+003
50.0	295.5	34038.4	38.49	15.00	.816+003	.595-003	.232+005	2110.0	.134+002	.317+001	.166+002	.292+003
55.0	289.0	33920.3	38.37	15.00	.117+004	.715-003	.230+005	2247.1	.160+002	.446+001	.205+002	.385+003
60.0	283.1	33775.1	38.21	15.00	.163+004	.850-003	.228+005	2381.7	.188+002	.602+001	.248+002	.498+003
65.0	278.2	33540.5	37.94	15.00	.212+004	.975-003	.225+005	2482.0	.213+002	.726+001	.285+002	.632+003
70.0	273.8	33265.1	37.63	15.00	.259+004	.108-002	.222+005	2556.0	.232+002	.829+001	.315+002	.782+003
75.0	270.1	32928.3	37.25	15.00	.328+004	.122-002	.217+005	2621.0	.256+002	.812+001	.343+002	.946+003
80.0	267.2	32514.5	36.78	15.00	.381+004	.131-002	.212+005	2638.3	.268+002	.827+001	.351+002	.112+004
85.0	264.7	32067.1	36.28	15.00	.432+004	.139-002	.204+005	2630.4	.276+002	.711+001	.347+002	.129+004
90.0	263.0	31562.6	35.71	15.00	.469+004	.144-002	.200+005	2593.7	.278+002	.534+001	.331+002	.146+004
95.0	261.9	31040.6	35.06	15.00	.487+004	.146-002	.193+005	2532.1	.272+002	.337+001	.305+002	.162+004
100.0	261.3	30506.8	34.38	15.00	.492+004	.147-002	.187+005	2474.2	.263+002	.193+001	.282+002	.177+004
105.0	260.7	29973.1	33.71	15.00	.496+004	.145-002	.180+005	2415.3	.251+002	.904+000	.260+002	.191+004
110.0	260.6	29453.8	33.12	15.00	.490+004	.142-002	.174+005	2362.2	.238+002	.386+000	.242+002	.203+004
115.0	261.0	28963.5	32.61	15.00	.472+004	.138-002	.168+005	2310.9	.223+002	.159+000	.224+002	.215+004
120.0	261.7	28487.1	32.14	15.00	.452+004	.134-002	.163+005	2267.3	.210+002	.808+001	.211+002	.226+004
125.0	262.7	28063.2	31.75	15.00	.424+004	.129-002	.158+005	2219.2	.196+002	.473+001	.196+002	.236+004
130.0	263.9	27663.1	31.29	15.00	.391+004	.123-002	.154+005	2169.9	.182+002	.300+001	.182+002	.245+004
135.0	265.3	27298.9	30.88	15.00	.357+004	.109-002	.149+005	2070.6	.156+002	.206+001	.156+002	.254+004
140.0	266.9	26981.4	30.52	15.00	.322+004	.110-002	.146+005	2062.8	.154+002	.146+001	.154+002	.261+004
145.0	268.6	26686.3	30.19	15.00	.290+004	.104-002	.143+005	2014.6	.143+002	.922+001	.143+002	.269+004
150.0	270.5	26433.7	29.90	15.00	.258+004	.971-003	.140+005	1959.6	.130+002	.686+002	.131+002	.276+004
155.0	272.5	26208.9	29.65	15.00	.228+004	.908-003	.138+005	1910.9	.120+002	.508+002	.120+002	.282+004
160.0	274.6	26002.8	29.42	15.00	.202+004	.848-003	.136+005	1862.3	.111+002	.379+002	.111+002	.288+004
170.0	279.1	25682.6	29.05	15.00	.154+004	.734-003	.132+005	1763.6	.931+001	.226+002	.931+001	.298+004
180.0	283.9	25436.6	28.78	15.00	.117+004	.633-003	.130+005	1675.1	.791+001	.135+002	.791+001	.307+004
190.0	289.0	25249.3	28.56	15.00	.871+003	.545-003	.128+005	1589.3	.671+001	.823+003	.672+001	.314+004
200.0	294.4	25119.0	28.42	15.00	.642+003	.468-003	.127+005	1509.4	.573+001	.518+003	.573+001	.320+004
210.0	299.6	25006.2	27.97	15.00	.453+003	.398-003	.126+005	1428.1	.484+001	.304+003	.484+001	.325+004
220.0	305.5	24930.7	27.50	15.00	.315+003	.336-003	.125+005	1346.8	.406+001	.185+003	.406+001	.330+004
230.0	311.3	24874.0	27.06	15.00	.220+003	.284-003	.124+005	1269.5	.341+001	.114+003	.341+001	.334+004
240.0	317.3	24830.9	26.64	15.00	.154+003	.240-003	.124+005	1198.8	.288+001	.706+004	.288+001	.337+004
250.0	323.5	24798.8	26.24	15.00	.107+003	.202-003	.124+005	1129.3	.243+001	.262+004	.243+001	.339+004
260.0	329.7	24773.1	25.97	15.00	.754+002	.170-003	.123+005	1059.6	.203+001	.164+004	.203+001	.342+004
270.0	336.2	24752.3	25.36	15.00	.512+002	.143-003	.123+005	995.8	.171+001	.101+004	.171+001	.343+004
280.0	342.7	24734.8	24.79	15.00	.352+002	.121-003	.123+005	936.6	.145+001	.644+005	.145+001	.345+004
290.0	349.4	24720.1	24.24	15.00	.244+002	.103-003	.123+005	881.9	.123+001	.405+005	.123+001	.346+004
300.0	356.2	24707.0	23.72	15.00	.171+002	.879-004	.123+005	830.0	.105+001	.263+005	.105+001	.348+004
310.0	363.2	24694.8	22.95	15.00	.120+002	.756-004	.123+005	782.6	.902+000	.172+005	.908+000	.349+004
320.0	370.2	24683.3	22.07	15.00	.806+001	.639-004	.123+005	731.8	.768+000	.248+006	.768+000	.349+004
330.0	377.4	24672.6	21.27	15.00	.555+001	.543-004	.123+005	684.5	.653+000	.157+006	.653+000	.350+004
340.0	384.8	24662.1	20.53	15.00	.390+001	.466-004	.123+005	641.8	.561+000	.102+006	.561+000	.351+004
350.0	392.2	24651.8	19.86	15.00	.281+001	.402-004	.123+005	602.0	.484+000	.678+007	.484+000	.351+004
360.0	399.7	24641.6	18.79	15.00	.189+001	.340-004	.123+005	558.7	.410+000	.430+007	.410+000	.352+004

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BOEING LIFTING BRAKE TRAJ (5XGEQ) CONVECTIVE BRAKE ENV.

R.P. NO. 90

TIME SEC	ALT KFT	VEL FT/SEC	MACH NO	ANGLE ATTACK	REYNOLDS NO./FT	HEAT COEF LBM/SFT-S	REC ENTHALPY BTU/LBM	RAD EQUIV DEG F	CONV RATE BTU/SFT-S	RAD RATE BTU/SFT-S	TOT RATE BTU/SFT-S	HEAT LOAD BTU/SFT
4.0	389.0	34172.3	27.92	15.00	.447+001	.737-004	.235+005	999.3	.171+001	.204+001	.173+001	.000
10.0	373.5	34184.6	30.06	15.00	.441+001	.101-003	.235+005	1121.1	.234+001	.435+001	.238+001	.123+002
16.0	358.9	34194.4	32.57	15.00	.207+002	.144-003	.234+005	1268.0	.331+001	.838+001	.340+001	.296+002
22.0	345.2	34200.7	33.99	15.00	.424+002	.201-003	.234+005	1422.2	.461+001	.164+000	.478+001	.542+002
28.0	332.5	34202.4	35.50	15.00	.681+002	.279-003	.234+005	1589.6	.639+001	.325+000	.672+001	.887+002
34.0	321.1	34189.8	36.37	15.00	.169+003	.443-003	.236+005	1850.2	.102+002	.631+000	.108+002	.141+003
40.0	310.7	34158.5	37.22	15.00	.314+003	.515-003	.234+005	1953.9	.118+002	.117+001	.129+002	.213+003
45.0	302.6	34115.9	37.89	15.00	.517+003	.651-003	.233+005	2113.1	.148+002	.192+001	.167+002	.287+003
50.0	295.5	34038.4	38.49	15.00	.816+003	.805-003	.232+005	2268.2	.182+002	.294+001	.211+002	.301+003
55.0	289.0	33920.3	38.37	15.00	.117+004	.968-003	.230+005	2407.6	.216+002	.414+001	.257+002	.498+003
60.0	283.1	33775.1	38.21	15.00	.163+004	.115-002	.228+005	2543.5	.254+002	.558+001	.310+002	.640+003
65.0	278.2	33540.5	37.94	15.00	.212+004	.132-002	.225+005	2646.7	.287+002	.673+001	.355+002	.806+003
70.0	273.8	33265.1	37.63	15.00	.269+004	.146-002	.222+005	2721.5	.313+002	.769+001	.390+002	.993+003
75.0	270.1	32928.3	37.25	15.00	.120+004	.165-002	.217+005	2792.8	.345+002	.808+001	.426+002	1.20+004
80.0	267.2	32514.5	36.78	15.00	.201+004	.177-002	.212+005	2815.5	.362+002	.767+001	.438+002	.141+004
85.0	264.7	32067.1	36.28	15.00	.400+004	.188-002	.206+005	2816.3	.373+002	.659+001	.439+002	.163+004
90.0	263.0	31562.6	35.71	15.00	.449+004	.195-002	.200+005	2789.7	.375+002	.495+001	.425+002	.185+004
95.0	261.9	31040.6	35.06	15.00	.487+004	.198-002	.193+005	2738.4	.367+002	.312+001	.399+002	.205+004
100.0	261.3	30506.8	34.38	15.00	.492+004	.197-002	.187+005	2683.4	.354+002	.179+001	.372+002	.225+004
105.0	260.7	29973.1	33.71	15.00	.496+004	.196-002	.180+005	2629.6	.339+002	.838+000	.347+002	.242+004
110.0	260.6	29453.8	33.12	15.00	.490+004	.193-002	.174+005	2581.0	.322+002	.358+000	.326+002	.259+004
115.0	261.0	28963.5	32.61	15.00	.472+004	.187-002	.168+005	2525.6	.301+002	.148+000	.303+002	.275+004
120.0	261.7	28487.1	32.14	15.00	.452+004	.182-002	.163+005	2481.0	.284+002	.749+001	.285+002	.290+004
125.0	262.7	28063.2	31.75	15.00	.424+004	.174-002	.158+005	2424.5	.263+002	.438+001	.264+002	.304+004
130.0	263.9	27663.1	31.29	15.00	.391+004	.166-002	.154+005	2371.9	.245+002	.278+001	.245+002	.316+004
135.0	265.3	27298.9	30.81	15.00	.357+004	.144-002	.149+005	2269.2	.211+002	.191+001	.211+002	.328+004
140.0	266.9	26981.4	30.52	15.00	.322+004	.149-002	.146+005	2259.2	.208+002	.136+001	.208+002	.338+004
145.0	268.6	26686.3	30.19	15.00	.290+004	.140-002	.143+005	2203.2	.191+002	.555+002	.192+002	.348+004
150.0	270.5	26433.7	29.90	15.00	.258+004	.131-002	.140+005	2145.4	.175+002	.636+002	.175+002	.357+004
155.0	272.5	26208.9	29.65	15.00	.228+004	.123-002	.138+005	2095.6	.162+002	.471+002	.162+002	.366+004
160.0	274.6	26002.8	29.42	15.00	.202+004	.115-002	.136+005	2044.0	.150+002	.351+002	.150+002	.374+004
170.0	279.1	25682.6	29.05	15.00	.154+004	.994-003	.132+005	1936.7	.126+002	.210+002	.126+002	.387+004
180.0	283.9	25436.6	28.78	15.00	.117+004	.856-003	.130+005	1840.9	.107+002	.125+002	.107+002	.399+004
190.0	289.0	25249.3	28.56	15.00	.871+003	.738-003	.128+005	1788.9	.906+001	.763+003	.907+001	.409+004
200.0	294.4	25119.0	28.42	15.00	.642+003	.634-003	.127+005	1663.1	.774+001	.481+003	.774+001	.417+004
210.0	299.4	25006.2	27.97	15.00	.453+003	.538-003	.126+005	1574.4	.652+001	.282+003	.652+001	.424+004
220.0	305.5	24930.7	27.50	15.00	.315+003	.454-003	.125+005	1486.7	.547+001	.172+003	.547+001	.430+004
230.0	311.3	24874.0	27.06	15.00	.220+003	.384-003	.124+005	1403.7	.459+001	.106+003	.459+001	.435+004
240.0	317.3	24830.9	26.64	15.00	.154+003	.324-003	.124+005	1326.9	.382+001	.655+004	.388+001	.440+004
250.0	323.5	24798.8	26.24	15.00	.107+003	.273-003	.124+005	1252.6	.328+001	.243+004	.328+001	.443+004
260.0	329.7	24773.1	25.97	15.00	.734+002	.231-003	.123+005	1179.7	.275+001	.152+004	.275+001	.446+004
270.0	336.2	24752.3	25.36	15.00	.512+002	.194-003	.123+005	1110.2	.231+001	.939+005	.231+001	.449+004
280.0	342.7	24734.8	24.79	15.00	.352+002	.163-003	.123+005	1043.8	.195+001	.597+005	.195+001	.451+004
290.0	349.4	24720.1	24.24	15.00	.244+002	.139-003	.123+005	985.5	.166+001	.375+005	.166+001	.453+004
300.0	356.2	24707.0	23.72	15.00	.171+002	.119-003	.123+005	930.8	.142+001	.244+005	.142+001	.454+004
310.0	363.2	24694.8	22.95	15.00	.120+002	.102-003	.123+005	878.6	.122+001	.159+005	.122+001	.456+004
320.0	370.2	24683.3	22.07	15.00	.806+001	.865-004	.123+005	824.9	.104+001	.230+006	.104+001	.457+004
330.0	377.4	24672.6	21.27	15.00	.555+001	.734-004	.123+005	773.5	.882+000	.145+006	.882+000	.458+004
340.0	384.8	24662.1	20.53	15.00	.390+001	.630-004	.123+005	727.6	.757+000	.945+007	.757+000	.458+004
350.0	392.2	24651.8	19.86	15.00	.281+001	.544-004	.123+005	685.0	.655+000	.629+007	.655+000	.459+004
360.0	399.7	24641.6	19.19	15.00	.189+001	.460-004	.123+005	638.2	.554+000	.399+007	.554+000	.460+004

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TIME SEC	ALT KFT	V FT/SEC	MACH NO	ANGLE ATTACK	REYNOLDS NO./FT	HEAT COEF LBH/SFT-S	REC BTU/LGM	ENTHALPY DEG F	CONV RATE BTU/SFT-S	RAD RATE BTU/SFT-S	TOT RATE BTU/SFT-S	HEAT LOAD BTU/SFT
4.0	389.0	34172.3	27.92	15.00	.447+001	.845-004	.235+005	1049.2	.196+001	.196-001	.198+001	.000
10.0	373.5	34184.6	30.06	15.00	.941+001	.115-003	.235+005	1171.9	.266+001	.418-001	.270+001	.140+002
16.0	358.9	34194.4	32.57	15.00	.207+002	.165-003	.234+005	1325.8	.379+001	.805-001	.387+001	.337+002
22.0	345.2	34200.7	33.99	15.00	.424+002	.230-003	.234+005	1483.7	.528+001	.157+000	.543+001	.617+002
28.0	332.5	34202.4	35.50	15.00	.881+002	.320-003	.234+005	1656.5	.733+001	.312+000	.764+001	.101+003
34.0	321.1	34189.8	36.37	15.00	.169+003	.508-003	.236+005	1924.5	.117+002	.606+000	.123+002	.161+003
40.0	310.7	34158.5	37.22	15.00	.314+003	.591-003	.234+005	2028.8	.135+002	.112+001	.146+002	.242+003
45.0	302.6	34115.9	37.89	15.00	.517+003	.746-003	.233+005	2189.4	.169+002	.104+001	.188+002	.325+003
50.0	295.5	34038.4	38.49	15.00	.816+003	.923-003	.232+005	2346.6	.208+002	.282+001	.236+002	.431+003
55.0	289.0	33920.3	38.37	15.00	.117+004	.111-002	.230+005	2487.4	.248+002	.397+001	.287+002	.562+003
60.0	283.1	33775.1	38.21	15.00	.163+004	.132-002	.228+005	2625.3	.291+002	.536+001	.345+002	.720+003
65.0	278.2	33540.5	37.94	15.00	.212+004	.151-002	.225+005	2727.6	.328+002	.647+001	.393+002	.904+003
70.0	273.8	33265.1	37.63	15.00	.269+004	.166-002	.222+005	2807.4	.360+002	.739+001	.434+002	.111+004
75.0	270.1	32928.3	37.25	15.00	.328+004	.189-002	.217+005	2878.5	.395+002	.777+001	.473+002	.134+004
80.0	267.2	32514.5	36.78	15.00	.381+004	.203-002	.212+005	2904.6	.414+002	.736+001	.488+002	.158+004
85.0	264.7	32067.1	36.28	15.00	.432+004	.216-002	.206+005	2910.1	.428+002	.633+001	.491+002	.182+004
90.0	263.0	31562.6	35.71	15.00	.469+004	.224-002	.200+005	2887.3	.430+002	.476+001	.478+002	.207+004
95.0	261.9	31040.6	35.06	15.00	.487+004	.227-002	.193+005	2838.1	.421+002	.300+001	.451+002	.230+004
100.0	261.3	30506.8	34.38	15.00	.492+004	.226-002	.187+005	2785.8	.405+002	.172+001	.423+002	.252+004
105.0	260.7	29973.1	33.71	15.00	.496+004	.225-002	.180+005	2733.8	.388+002	.805+000	.396+002	.272+004
110.0	260.6	29453.8	33.12	15.00	.490+004	.221-002	.174+005	2683.2	.368+002	.344+000	.372+002	.291+004
115.0	261.0	28963.5	32.61	15.00	.472+004	.215-002	.168+005	2629.8	.346+002	.142+000	.347+002	.309+004
120.0	261.7	28487.1	32.14	15.00	.452+004	.209-002	.163+005	2583.0	.326+002	.720+001	.326+002	.326+004
125.0	262.7	28063.2	31.75	15.00	.424+004	.200-002	.158+005	2525.3	.302+002	.421+001	.302+002	.342+004
130.0	263.9	27663.1	31.29	15.00	.391+004	.190-002	.154+005	2467.9	.280+002	.267+001	.280+002	.356+004
135.0	265.3	27298.9	30.88	15.00	.357+004	.169-002	.149+005	2360.1	.241+002	.189+001	.241+002	.369+004
140.0	266.9	26981.4	30.52	15.00	.322+004	.171-002	.146+005	2353.3	.238+002	.130+001	.239+002	.381+004
145.0	268.6	26686.3	30.19	15.00	.290+004	.161-002	.143+005	2296.7	.220+002	.821+002	.220+002	.393+004
150.0	270.5	26433.7	29.90	15.00	.258+004	.151-002	.140+005	2238.5	.202+002	.611+002	.202+002	.403+004
155.0	272.5	26208.9	29.65	15.00	.228+004	.141-002	.138+005	2183.3	.186+002	.453+002	.186+002	.413+004
160.0	274.6	26002.8	29.42	15.00	.202+004	.132-002	.136+005	2130.7	.172+002	.337+002	.172+002	.422+004
170.0	279.1	25682.6	29.05	15.00	.154+004	.114-002	.132+005	2019.3	.144+002	.202+002	.144+002	.438+004
180.0	283.9	25436.6	28.78	15.00	.117+004	.981-003	.130+005	1919.5	.122+002	.120+002	.122+002	.451+004
190.0	289.0	25249.3	28.56	15.00	.871+003	.846-003	.128+005	1824.8	.104+002	.733+003	.104+002	.462+004
200.0	294.4	25119.0	28.42	15.00	.642+003	.726-003	.127+005	1735.5	.885+001	.462+003	.885+001	.472+004
210.0	299.8	25006.2	27.97	15.00	.453+003	.617-003	.125+005	1644.6	.747+001	.271+003	.747+001	.480+004
220.0	305.5	24930.7	27.50	15.00	.315+003	.521-003	.125+005	1554.2	.627+001	.165+003	.627+001	.487+004
230.0	311.3	24874.0	27.06	15.00	.220+003	.411-003	.124+005	1468.7	.527+001	.101+003	.527+001	.493+004
240.0	317.3	24830.9	26.64	15.00	.154+003	.372-003	.124+005	1389.1	.445+001	.629+004	.445+001	.498+004
250.0	323.5	24798.8	26.24	15.00	.107+003	.313-003	.124+005	1311.6	.375+001	.234+004	.375+001	.502+004
260.0	329.7	24773.1	25.97	15.00	.754+002	.264-003	.123+005	1234.9	.314+001	.146+004	.314+001	.505+004
270.0	336.2	24752.3	25.36	15.00	.512+002	.222-003	.123+005	1163.4	.265+001	.903+005	.265+001	.508+004
280.0	342.7	24734.8	24.79	15.00	.352+002	.187-003	.123+005	1096.0	.223+001	.574+005	.223+001	.510+004
290.0	349.4	24720.1	24.24	15.00	.244+002	.159-003	.123+005	1034.6	.190+001	.360+005	.190+001	.513+004
300.0	356.2	24707.0	23.72	15.00	.171+002	.136-003	.123+005	977.7	.163+001	.234+005	.163+001	.514+004
310.0	363.2	24694.8	22.95	15.00	.120+002	.117-003	.123+005	925.0	.140+001	.153+005	.140+001	.516+004
320.0	370.2	24683.3	22.07	15.00	.906+001	.992-004	.123+005	869.4	.119+001	.221+006	.119+001	.517+004
330.0	377.4	24672.6	21.27	15.00	.555+001	.842-004	.123+005	816.3	.101+001	.140+006	.101+001	.518+004
340.0	384.8	24662.1	20.53	15.00	.390+001	.723-004	.123+005	768.9	.869+000	.908+007	.869+000	.519+004
350.0	392.2	24651.8	19.86	15.00	.281+001	.624-004	.123+005	724.7	.750+000	.604+007	.750+000	.520+004
360.0	399.7	24641.6	18.79	15.00	.189+001	.527-004	.123+005	676.0	.634+000	.383+007	.634+000	.521+004

ORIGINAL PAGE IS
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BOEING LIFTING BRAKE TRAJECTORY (5XGE0) CONVECTIVE BRAKE ENV.

B.P. NO. 97

TIME SEC	ALT KFT	VEL FT/SEC	MACH NO	ANGLE ATTACK	REYNOLDS NO./FT	HEAT COEF LBM/SFT-S	REC ENTHALPY BTU/LBM	RAD EQUIV DEG F	CONV RATE BTU/SFT-S	RAD RATE BTU/SFT-S	TOT RATE BTU/SFT-S	HEAT LOAD BTU/SFT
4.0	380.0	34172.3	27.92	15.00	.447+001	.822-004	.235+005	1037.5	.190+001	.120-001	.191+001	.000
10.0	373.5	34184.6	30.06	15.00	.491+001	.112-001	.235+005	1158.8	.259+001	.256-001	.262+001	.136+002
16.0	358.9	34194.4	32.57	15.00	.207+002	.160-003	.234+005	1308.8	.368+001	.493-001	.373+001	.326+002
22.0	345.2	34200.7	33.99	15.00	.424+002	.224-003	.234+005	1465.7	.514+001	.964-001	.324+001	.595+002
28.0	332.5	34202.4	35.50	15.00	.881+002	.311-003	.234+005	1633.6	.713+001	.191+000	.732+001	.972+002
34.0	321.1	34199.8	36.37	15.00	.169+003	.494-003	.236+005	1897.2	.114+002	.371+000	.118+002	.154+003
40.0	310.7	34150.5	37.22	15.00	.314+003	.574-003	.234+005	1993.1	.131+002	.687+000	.138+002	.231+003
45.0	302.6	34115.9	37.89	15.00	.517+003	.726-003	.233+005	2147.4	.165+002	.113+001	.176+002	.310+003
50.0	295.5	34038.4	38.49	15.00	.816+003	.898-003	.232+005	2296.4	.203+002	.173+001	.220+002	.408+003
55.0	289.0	33920.3	38.37	15.00	.117+004	.108-002	.230+005	2429.4	.241+002	.243+001	.265+002	.530+003
60.0	283.1	33775.1	38.21	15.00	.163+004	.128-002	.228+005	2557.3	.283+002	.328+001	.316+002	.675+003
65.0	278.2	33580.5	37.94	15.00	.212+004	.147-002	.225+005	2657.4	.320+002	.396+001	.360+002	.844+003
70.0	273.8	33265.1	37.63	15.00	.269+004	.163-002	.222+005	2731.2	.350+002	.452+001	.395+002	.103+004
75.0	270.1	32928.3	37.25	15.00	.328+004	.184-002	.217+005	2805.0	.385+002	.475+001	.433+002	.124+004
80.0	267.2	32514.5	36.78	15.00	.381+004	.192-002	.212+005	2836.3	.404+002	.451+001	.450+002	.146+004
85.0	264.7	32067.1	36.28	15.00	.432+004	.210-002	.206+005	2846.4	.416+002	.388+001	.455+002	.169+004
90.0	263.0	31562.6	35.71	15.00	.469+004	.218-002	.200+005	2834.0	.419+002	.291+001	.448+002	.191+004
95.0	261.9	31040.6	35.06	15.00	.487+004	.220-002	.193+005	2792.6	.408+002	.184+001	.426+002	.213+004
100.0	261.3	30506.8	34.38	15.00	.492+004	.220-002	.187+005	2752.1	.395+002	.105+001	.405+002	.234+004
105.0	260.7	29973.1	33.71	15.00	.496+004	.218-002	.180+005	2703.1	.376+002	.493+000	.381+002	.254+004
110.0	260.6	29453.8	33.12	15.00	.490+004	.215-002	.174+005	2659.3	.358+002	.210+000	.361+002	.272+004
115.0	261.0	28963.5	32.61	15.00	.472+004	.209-002	.168+005	2607.1	.336+002	.870-001	.337+002	.289+004
120.0	261.7	28487.1	32.14	15.00	.452+004	.203-002	.163+005	2560.5	.317+002	.441-001	.317+002	.306+004
125.0	262.7	28063.2	31.75	15.00	.424+004	.194-002	.158+005	2502.5	.293+002	.258-001	.293+002	.321+004
130.0	263.9	27663.1	31.29	15.00	.391+004	.185-002	.154+005	2443.4	.272+002	.164-001	.272+002	.335+004
135.0	265.3	27298.9	30.84	15.00	.357+004	.165-002	.149+005	2343.2	.235+002	.113-001	.235+002	.348+004
140.0	268.9	26981.4	30.52	15.00	.322+004	.166-002	.146+005	2332.6	.232+002	.798-002	.232+002	.360+004
145.0	268.6	26866.3	30.19	15.00	.290+004	.156-002	.143+005	2275.2	.213+002	.503-002	.213+002	.371+004
150.0	270.5	26433.7	29.90	15.00	.258+004	.146-002	.140+005	2216.1	.195+002	.374-002	.195+002	.381+004
155.0	272.5	26208.8	29.65	15.00	.228+004	.137-002	.138+005	2164.5	.181+002	.277-002	.181+002	.390+004
160.0	274.6	26004.8	29.42	15.00	.202+004	.128-002	.136+005	2111.1	.166+002	.206-002	.166+002	.399+004
170.0	279.1	25588.4	29.05	15.00	.154+004	.111-002	.132+005	2003.0	.140+002	.124-002	.140+002	.414+004
180.0	283.9	25436.6	28.78	15.00	.117+004	.954-003	.130+005	1903.1	.119+002	.735-003	.119+002	.427+004
190.0	289.0	25249.3	28.56	15.00	.871+003	.823-003	.128+005	1809.3	.101+002	.449-003	.101+002	.438+004
200.0	294.4	25119.0	28.42	15.00	.642+003	.706-003	.127+005	1720.4	.861+001	.283-003	.861+001	.448+004
210.0	299.8	25006.2	27.97	15.00	.453+003	.600-003	.126+005	1630.1	.727+001	.166-003	.727+001	.456+004
220.0	307.5	24930.7	27.50	15.00	.315+003	.507-003	.125+005	1540.6	.610+001	.101-003	.610+001	.462+004
230.0	311.3	24874.0	27.06	15.00	.220+003	.428-003	.124+005	1454.5	.512+001	.621-004	.512+001	.468+004
240.0	317.3	24830.9	26.64	15.00	.154+003	.362-003	.124+005	1376.7	.433+001	.385-004	.433+001	.473+004
250.0	323.5	24798.8	26.24	15.00	.107+003	.305-003	.124+005	1300.3	.366+001	.143-004	.366+001	.477+004
260.0	329.7	24773.1	25.77	15.00	.754+002	.257-003	.123+005	1223.7	.306+001	.893-005	.306+001	.480+004
270.0	336.2	24752.3	25.36	15.00	.512+002	.216-003	.123+005	1152.6	.258+001	.553-005	.258+001	.483+004
280.0	342.7	24734.8	24.79	15.00	.352+002	.182-003	.123+005	1085.5	.217+001	.351-005	.217+001	.485+004
290.0	349.4	24720.1	24.24	15.00	.244+002	.155-003	.123+005	1025.2	.185+001	.221-005	.185+001	.487+004
300.0	356.2	24707.0	23.72	15.00	.171+002	.133-003	.123+005	969.8	.143+001	.143-005	.143+001	.489+004
310.0	363.2	24694.8	22.95	15.00	.120+002	.114-003	.123+005	916.1	.137+001	.938-006	.137+001	.490+004
320.0	370.2	24683.3	22.07	15.00	.806+001	.965-004	.123+005	860.3	.116+001	.135-006	.116+001	.492+004
330.0	377.4	24672.6	21.27	15.00	.555+001	.819-004	.123+005	807.6	.083+000	.855-007	.083+000	.493+004
340.0	384.8	24662.1	20.53	15.00	.390+001	.702-004	.123+005	759.9	.843+000	.556-007	.843+000	.494+004
350.0	392.2	24651.8	19.86	15.00	.281+001	.606-004	.123+005	716.2	.729+000	.370-007	.729+000	.494+004
360.0	399.7	24641.6	18.79	15.00	.189+001	.512-004	.123+005	667.9	.616+000	.234-007	.616+000	.495+004

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OF POOR QUALITY

BOEING LIFTING BRAKE TRAJ 15XGE01 CONJECTIVE BRAKE ENV.

B.P. NO. 99

TIME SEC	ALT KFT	VEL FT/SEC	MACH NO	ANGLE ATTACK	REYNOLDS NO./FT	HEAT COEF LBM/SFT-S	R/C BTU/LBM	ENTHALPY DEG F	RAD EQUIL BTU/SFT-S	CONV RATE BTU/SFT-S	RAD RATE BTU/SFT-S	TOT RATE BTU/SFT-S	HEAT LOAD BTU/SFT
4.0	389.0	34172.3	27.92	15.00	.447+001	.761-004	.235+005	1007.7	.176+001	.479+002	.177+001	.000	
10.0	373.5	34184.6	30.06	15.00	.941+001	.104-003	.235+005	1127.0	.241+001	.102+001	.242+001	.125+002	
16.0	358.9	34194.4	32.57	15.00	.207+002	.140-003	.234+005	1271.5	.340+001	.197+001	.342+001	.301+002	
22.0	345.2	34200.7	33.99	15.00	.424+002	.207-003	.234+005	1423.4	.475+001	.386+001	.479+001	.547+002	
28.0	332.5	34202.4	35.50	15.00	.881+002	.288-003	.234+005	1586.4	.660+001	.764+001	.668+001	.891+002	
34.0	321.1	34189.8	36.37	15.00	.169+003	.457-003	.236+005	1841.7	.105+002	.148+000	.107+002	.141+003	
40.0	310.7	34158.5	37.22	15.00	.314+003	.531-003	.234+005	1929.0	.121+002	.275+000	.124+002	.210+003	
45.0	302.6	34115.9	37.89	15.00	.517+003	.672-003	.233+005	2074.4	.153+002	.451+000	.157+002	.281+003	
50.0	295.5	34038.4	38.49	15.00	.816+003	.831-003	.232+005	2213.3	.188+002	.691+000	.194+002	.369+003	
55.0	289.0	33920.3	38.37	15.00	.117+004	.999-003	.230+005	2336.7	.223+002	.973+000	.233+002	.476+003	
60.0	283.1	33775.1	38.21	15.00	.163+004	.119-002	.228+005	2458.6	.263+002	.131+001	.276+002	.603+003	
65.0	278.2	33540.5	37.94	15.00	.212+004	.136-002	.225+005	2549.2	.296+002	.158+001	.312+002	.750+003	
70.0	273.8	33265.1	37.63	15.00	.269+004	.151-002	.222+005	2619.4	.324+002	.181+001	.342+002	.914+003	
75.0	270.1	32928.3	37.25	15.00	.328+004	.170-002	.217+005	2691.0	.356+002	.190+001	.375+002	.109+004	
80.0	267.2	32514.5	36.78	15.00	.381+004	.183-002	.212+005	2726.0	.374+002	.180+001	.392+002	.129+004	
85.0	264.7	32067.1	36.28	15.00	.432+004	.194-002	.206+005	2742.6	.385+002	.155+001	.401+002	.148+004	
90.0	263.0	31562.6	35.71	15.00	.469+004	.201-002	.200+005	2738.6	.387+002	.117+001	.399+002	.168+004	
95.0	261.9	31040.6	35.06	15.00	.487+004	.204-002	.193+005	2712.8	.379+002	.734+000	.386+002	.188+004	
100.0	261.3	30506.8	34.38	15.00	.492+004	.204-002	.187+005	2681.1	.366+002	.421+000	.371+002	.207+004	
105.0	260.7	29973.1	33.71	15.00	.496+004	.202-002	.180+005	2638.3	.340+002	.197+000	.351+002	.225+004	
110.0	260.6	29453.8	33.12	15.00	.490+004	.199-002	.174+005	2597.7	.320+002	.841+001	.333+002	.242+004	
115.0	261.0	28963.5	32.61	15.00	.472+004	.193-002	.168+005	2546.2	.311+002	.348+001	.311+002	.258+004	
120.0	261.7	28487.1	32.14	15.00	.452+004	.188-002	.163+005	2503.2	.293+002	.176+001	.294+002	.273+004	
125.0	262.7	28063.2	31.75	15.00	.424+004	.180-002	.158+005	2447.8	.272+002	.103+001	.272+002	.287+004	
130.0	263.9	27663.1	31.29	15.00	.391+004	.171-002	.154+005	2392.1	.252+002	.655+002	.252+002	.300+004	
135.0	265.3	27298.9	30.88	15.00	.357+004	.152-002	.149+005	2286.7	.217+002	.450+002	.217+002	.312+004	
140.0	266.9	26981.4	30.52	15.00	.322+004	.154-002	.146+005	2281.1	.215+002	.319+002	.215+002	.323+004	
145.0	268.6	26686.3	30.19	15.00	.290+004	.145-002	.143+005	2226.2	.198+002	.201+002	.198+002	.333+004	
150.0	270.5	26433.7	29.90	15.00	.258+004	.136-002	.140+005	2169.5	.182+002	.150+002	.182+002	.343+004	
155.0	272.5	26208.9	29.65	15.00	.228+004	.127-002	.138+005	2115.8	.168+002	.111+002	.168+002	.352+004	
160.0	274.6	26002.8	29.42	15.00	.202+004	.118-002	.136+005	2059.8	.154+002	.826+003	.154+002	.360+004	
170.0	279.1	25682.6	29.05	15.00	.154+004	.103-002	.132+005	1957.8	.130+002	.494+003	.130+002	.374+004	
180.0	283.9	25436.6	28.78	15.00	.117+004	.883-003	.130+005	1858.3	.110+002	.294+003	.110+002	.386+004	
190.0	289.0	25249.3	28.56	15.00	.871+003	.762-003	.128+005	1766.4	.936+001	.180+003	.936+001	.396+004	
200.0	294.4	25119.0	28.42	15.00	.642+003	.654-003	.127+005	1679.5	.798+001	.113+003	.798+001	.405+004	
210.0	299.8	25006.2	27.97	15.00	.453+003	.555-003	.126+005	1590.1	.673+001	.663+004	.673+001	.412+004	
220.0	305.5	24930.7	27.50	15.00	.315+003	.469-003	.125+005	1502.4	.565+001	.404+004	.565+001	.418+004	
230.0	311.3	24874.0	27.06	15.00	.220+003	.397-003	.124+005	1419.1	.475+001	.248+004	.475+001	.423+004	
240.0	317.3	24830.9	26.64	15.00	.154+003	.335-003	.124+005	1341.7	.401+001	.154+004	.401+001	.428+004	
250.0	323.5	24798.8	26.24	15.00	.107+003	.282-003	.124+005	1266.4	.338+001	.573+005	.338+001	.431+004	
260.0	329.7	24773.1	25.97	15.00	.754+002	.238-003	.123+005	1191.9	.284+001	.357+005	.284+001	.435+004	
270.0	336.2	24752.3	25.36	15.00	.512+002	.200-003	.123+005	1122.1	.239+001	.221+005	.239+001	.437+004	
280.0	342.7	24734.8	24.79	15.00	.352+002	.169+003	.123+005	1057.4	.202+001	.141+005	.202+001	.439+004	
290.0	349.9	24720.1	24.24	15.00	.244+002	.143-003	.123+005	995.8	.171+001	.883+006	.171+001	.441+004	
300.0	356.2	24707.0	23.72	15.00	.171+002	.123-003	.123+005	942.3	.147+001	.574+006	.147+001	.443+004	
310.0	363.2	24694.8	22.95	15.00	.120+002	.106-003	.123+005	891.5	.127+001	.375+006	.127+001	.444+004	
320.0	370.2	24683.3	22.07	15.00	.806+001	.893+004	.123+005	835.1	.107+001	.540+007	.107+001	.445+004	
330.0	377.4	24672.6	21.27	15.00	.555+001	.758+004	.123+005	783.4	.910+000	.342+007	.910+000	.446+004	
340.0	384.8	24662.1	20.53	15.00	.390+001	.650+004	.123+005	736.8	.781+000	.222+007	.781+000	.447+004	
350.0	392.2	24651.8	19.86	15.00	.281+001	.561+004	.123+005	693.8	.675+000	.148+007	.675+000	.448+004	
260.0	397.7	24641.6	18.79	15.00	.189+001	.474+004	.123+005	646.5	.571+000	.938+008	.571+000	.449+004	

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BOILING LIFTING BRAKE TWAJ (5XGEQ) CONVECTIVE BRAKE ENV.

B.P. NO. 100

TIME SEC	ALT KFT	VEL FT/SEC	MACH NO	ANGLE ATTACK	REYNOLDS NO./FT	HEAT COEF LBM/FT-S	REC ENTHALPY BTU/LBM	RAD EQUIL DEG F	CONV RATE BTU/FT-S	RAD RATE BTU/FT-S	TOT RATE BTU/FT-S	HEAT LOAD BTU/FT
4.0	389.0	34172.3	27.92	15.00	.447+001	.610-004	.235+005	928.6	.141+001	.208-002	.142+001	.000
10.0	373.5	34184.6	30.06	15.00	.441+001	.833-004	.235+005	1091.0	.193+001	.443-002	.193+001	.100+002
16.0	358.9	34194.4	32.57	15.00	.207+002	.119-003	.234+005	1178.9	.274+001	.854-002	.275+001	.241+002
22.0	345.2	34200.7	33.99	15.00	.424+002	.166-003	.234+005	1321.1	.382+001	.167-001	.383+001	.438+002
28.0	332.5	34202.4	35.50	15.00	.881+002	.231-003	.234+005	1474.6	.530+001	.331-001	.533+001	.713+002
34.0	321.1	34189.8	36.37	15.00	.169+003	.367-003	.236+005	1716.1	.847+001	.643-001	.854+001	.113+003
40.0	310.7	34158.5	37.22	15.00	.314+003	.226-003	.234+005	1795.9	.974+001	.119+000	.986+001	.168+003
45.0	302.6	34115.9	37.89	15.00	.517+003	.339-003	.233+005	1931.3	.123+002	.195+000	.125+002	.224+003
50.0	295.5	34038.4	38.49	15.00	.816+003	.667-003	.232+005	2061.0	.151+002	.299+000	.154+002	.294+003
55.0	289.0	33920.3	38.37	15.00	.117+004	.801-003	.230+005	2174.4	.179+002	.422+000	.184+002	.378+003
60.0	283.1	33775.1	38.21	15.00	.163+004	.952-003	.228+005	2286.3	.211+002	.569+000	.217+002	.478+003
65.0	278.2	33540.5	37.94	15.00	.212+004	.109-002	.225+005	2371.8	.238+002	.686+000	.245+002	.593+003
70.0	273.8	33265.1	37.63	15.00	.269+004	.121-002	.222+005	2437.1	.260+002	.784+000	.268+002	.722+003
75.0	270.1	32928.1	37.25	15.00	.328+004	.136-002	.217+005	2504.0	.246+002	.824+000	.294+002	.862+003
80.0	267.2	32514.5	36.78	15.00	.381+004	.147-002	.212+005	2541.7	.301+002	.782+000	.309+002	.101+004
85.0	264.7	32067.1	36.28	15.00	.432+004	.156-002	.206+005	2560.7	.310+002	.672+000	.317+002	.117+004
90.0	263.0	31362.6	35.71	15.00	.469+004	.162-002	.200+005	2562.0	.313+002	.505+000	.318+002	.133+004
95.0	261.9	31040.6	35.06	15.00	.482+004	.164-002	.193+005	2539.4	.305+002	.318+000	.308+002	.148+004
100.0	261.3	30506.8	34.38	15.00	.492+004	.163-002	.187+005	2507.5	.293+002	.182+000	.295+002	.164+004
105.0	260.7	29973.1	33.71	15.00	.496+004	.162-002	.180+005	2471.8	.280+002	.854-001	.281+002	.178+004
110.0	260.6	29453.8	33.12	15.00	.490+004	.160-002	.174+005	2436.2	.268+002	.365-001	.268+002	.192+004
115.0	261.0	28963.5	32.61	15.00	.472+004	.155-002	.168+005	2387.1	.250+002	.151-001	.250+002	.205+004
120.0	261.7	28487.1	32.14	15.00	.452+004	.151-002	.163+005	2346.6	.236+002	.764-002	.236+002	.217+004
125.0	262.7	28063.2	31.75	15.00	.424+004	.144-002	.158+005	2291.6	.218+002	.447-002	.218+002	.228+004
130.0	263.9	27663.1	31.29	15.00	.391+004	.138-002	.154+005	2244.8	.204+002	.284-002	.204+002	.239+004
135.0	265.3	27298.9	30.88	15.00	.357+004	.122-002	.149+005	2191.3	.179+002	.195-002	.174+002	.248+004
140.0	266.9	26981.4	30.52	15.00	.322+004	.123-002	.146+005	2132.9	.172+002	.138-002	.172+002	.257+004
145.0	268.6	26686.3	30.19	15.00	.290+004	.116-002	.143+005	2081.9	.159+002	.872-003	.159+002	.265+004
150.0	270.5	26433.7	29.90	15.00	.258+004	.109-002	.140+005	2029.5	.146+002	.648-003	.146+002	.273+004
155.0	272.5	26208.9	29.65	15.00	.228+004	.102-002	.138+005	1979.8	.135+002	.480-003	.135+002	.280+004
160.0	274.6	26002.8	29.42	15.00	.202+004	.951-003	.136+005	1928.9	.124+002	.358-003	.124+002	.286+004
170.0	279.1	25682.6	29.05	15.00	.154+004	.823-003	.132+005	1827.3	.104+002	.219-003	.104+002	.298+004
180.0	283.9	25436.6	28.78	15.00	.117+004	.709-003	.130+005	1735.8	.885+001	.127-003	.885+001	.307+004
190.0	289.0	25249.3	28.56	15.00	.871+003	.611-003	.128+005	1648.0	.752+001	.778-004	.752+001	.315+004
200.0	294.4	25119.0	28.42	15.00	.642+003	.525-003	.127+005	1566.2	.642+001	.490-004	.642+001	.322+004
210.0	299.8	25006.2	27.97	15.00	.453+003	.446-003	.126+005	1482.1	.542+001	.287-004	.542+001	.328+004
220.0	305.5	24930.7	27.50	15.00	.315+003	.376-003	.125+005	1397.8	.454+001	.175-004	.454+001	.333+004
230.0	311.3	24874.0	27.06	15.00	.220+003	.318-003	.124+005	1318.6	.381+001	.108-004	.381+001	.338+004
240.0	317.3	24830.9	26.64	15.00	.154+003	.269-003	.124+005	1246.3	.323+001	.668-005	.323+001	.341+004
250.0	323.5	24798.8	26.24	15.00	.107+003	.226-003	.124+005	1174.2	.272+001	.248-005	.272+001	.344+004
260.0	329.7	24773.1	25.97	15.00	.754+002	.191-003	.123+005	1104.2	.228+001	.155-005	.228+001	.347+004
270.0	336.2	24752.3	25.36	15.00	.512+002	.161-003	.123+005	1039.2	.192+001	.958-006	.192+001	.349+004
280.0	342.7	24734.8	24.79	15.00	.352+002	.135-003	.123+005	975.1	.162+001	.609-006	.162+001	.350+004
290.0	349.4	24720.1	24.24	15.00	.249+002	.115-003	.123+005	919.1	.138+001	.383-006	.138+001	.352+004
300.0	356.2	24707.0	23.72	15.00	.171+002	.985-004	.123+005	867.0	.118+001	.249-006	.118+001	.353+004
310.0	363.2	24694.8	22.95	15.00	.120+002	.848-004	.123+005	818.6	.102+001	.163-006	.102+001	.354+004
320.0	370.2	24683.3	22.07	15.00	.806+001	.717-004	.123+005	766.4	.861+000	.234-007	.861+000	.355+004
330.0	377.4	24672.6	21.27	15.00	.555+001	.608-004	.123+005	717.1	.731+000	.148-007	.731+000	.356+004
340.0	384.8	24662.1	20.53	15.00	.390+001	.522-004	.123+005	673.3	.628+000	.964-008	.628+000	.357+004
350.0	392.2	24651.8	19.86	15.00	.281+001	.450-004	.123+005	632.3	.542+000	.641-008	.542+000	.357+004
360.0	399.7	24641.6	18.79	15.00	.189+001	.381-004	.123+005	588.0	.459+000	.406-008	.459+000	.358+004

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APPENDIX C
PAYLOAD ENVIRONMENT

The payload environment is listed in this appendix. Each page contains the convective heating environment for a body point. No radiation or RCS effects have been included in this environment. The load and rate values assume no rolling during entry.

GOING LIFTING BRAKE TRAJ (5X60) CONVECTIVE PAYLOAD ENV.

H.P. NO. 50007

TIME SEC	ALT KFT	VEL FT/SEC	MACH NO	ANGLE ATTACK	REYNOLDS NO./FT	HEAT COEF LBM/SFT-S	REF ENTHALPY RTU/LBM	RAD EQUIV DEG F	CONV RATE BTU/SFT-S	RAD RATE BTU/SFT-S	TOT RATE BTU/SFT-S	HEAT LOAD RTU/SFT
4.0	389.0	34172.3	27.92	15.00	.447+001	.150-005	.235+005	90.8	.351+001	.000	.351+001	.000
10.0	373.5	34184.6	30.06	15.00	.241+001	.205-005	.235+005	135.5	.479+001	.000	.479+001	.249+000
16.0	358.9	34194.4	32.57	15.00	.207+002	.293-005	.234+005	190.3	.681+001	.000	.681+001	.597+000
22.0	345.7	34200.7	33.99	15.00	.424+002	.409-005	.234+005	246.8	.950+001	.000	.950+001	.109+001
28.0	332.5	34202.4	35.50	15.00	.681+002	.568-005	.234+005	307.2	.132+000	.000	.132+000	.177+001
34.0	321.1	34189.8	36.37	15.00	.169+003	.903-005	.236+005	403.1	.211+000	.000	.211+000	.280+001
40.0	310.7	34158.5	37.22	15.00	.314+003	.105-004	.234+005	434.2	.244+000	.000	.244+000	.416+001
45.0	302.6	34115.9	37.89	15.00	.517+003	.133-004	.233+005	487.5	.307+000	.000	.307+000	.554+001
50.0	295.5	34038.4	38.49	15.00	.816+003	.164-004	.232+005	537.3	.377+000	.000	.377+000	.725+001
55.0	289.0	33920.3	38.37	15.00	.117+004	.197-004	.230+005	581.6	.448+000	.000	.448+000	.931+001
60.0	283.1	33775.1	38.21	15.00	.163+004	.234-004	.228+005	624.9	.528+000	.000	.528+000	.117+002
65.0	278.2	33540.5	37.94	15.00	.212+004	.269-004	.225+005	659.5	.598+000	.000	.598+000	.146+002
70.0	273.8	33265.1	37.63	15.00	.269+004	.298-004	.222+005	684.6	.654+000	.000	.654+000	.177+002
75.0	270.1	32928.3	37.25	15.00	.328+004	.336-004	.217+005	712.6	.720+000	.000	.720+000	.211+002
80.0	267.2	32514.5	36.78	15.00	.381+004	.361-004	.212+005	726.7	.755+000	.000	.755+000	.248+002
85.0	264.7	32067.1	36.28	15.00	.432+004	.384-004	.208+005	736.4	.780+000	.000	.780+000	.287+002
90.0	263.0	31562.6	35.71	15.00	.469+004	.398-004	.200+005	738.2	.785+000	.000	.785+000	.326+002
95.0	261.9	31040.6	35.06	15.00	.487+004	.403-004	.193+005	731.1	.767+000	.000	.767+000	.364+002
100.0	261.3	30506.8	34.38	15.00	.492+004	.402-004	.187+005	720.9	.741+000	.000	.741+000	.402+002
105.0	260.7	29973.1	33.71	15.00	.496+004	.399-004	.180+005	707.4	.707+000	.000	.707+000	.438+002
110.0	260.6	29453.6	33.12	15.00	.490+004	.393-004	.174+005	693.1	.673+000	.000	.673+000	.473+002
115.0	261.0	28983.5	32.61	15.00	.472+004	.382-004	.168+005	674.9	.632+000	.000	.632+000	.505+002
120.0	261.7	28487.1	32.14	15.00	.452+004	.371-004	.163+005	658.0	.595+000	.000	.595+000	.536+002
125.0	262.7	28063.2	31.75	15.00	.424+004	.355-004	.158+005	637.2	.552+000	.000	.552+000	.565+002
130.0	263.9	27663.1	31.29	15.00	.391+004	.338-004	.154+005	616.8	.512+000	.000	.512+000	.591+002
135.0	265.3	27298.9	30.88	15.00	.357+004	.301-004	.149+005	577.5	.441+000	.000	.441+000	.615+002
140.0	266.9	26981.4	30.52	15.00	.322+004	.304-004	.146+005	574.7	.436+000	.000	.436+000	.637+002
145.0	268.6	26686.3	30.19	15.00	.290+004	.286-004	.143+005	553.8	.402+000	.000	.402+000	.658+002
150.0	270.5	26433.7	29.90	15.00	.258+004	.267-004	.140+005	532.1	.369+000	.000	.369+000	.677+002
155.0	272.5	26208.9	29.65	15.00	.228+004	.250-004	.138+005	511.6	.339+000	.000	.339+000	.695+002
160.0	274.6	26002.8	29.42	15.00	.202+004	.234-004	.136+005	492.2	.313+000	.000	.313+000	.711+002
170.0	279.1	25682.6	29.05	15.00	.154+004	.203-004	.132+005	452.2	.264+000	.000	.264+000	.740+002
180.0	283.9	25436.6	28.78	15.00	.117+004	.174-004	.130+005	414.4	.223+000	.000	.223+000	.765+002
190.0	289.0	25249.3	28.56	15.00	.071+003	.150-004	.128+005	379.4	.189+000	.000	.189+000	.785+002
200.0	294.4	25119.0	28.42	15.00	.042+003	.129-004	.127+005	346.9	.161+000	.000	.161+000	.803+002
210.0	299.8	25006.2	27.97	15.00	.053+003	.110-004	.126+005	313.9	.137+000	.000	.137+000	.818+002
220.0	305.5	24930.7	27.50	15.00	.015+003	.926-005	.125+005	279.9	.114+000	.000	.114+000	.830+002
230.0	311.3	24874.0	27.06	15.00	.020+003	.783-005	.124+005	248.7	.958-001	.000	.958-001	.841+002
240.0	317.3	24830.9	26.64	15.00	.014+003	.661-005	.124+005	218.9	.809-001	.000	.809-001	.849+002
250.0	323.5	24798.8	26.24	15.00	.007+003	.557-005	.124+005	190.6	.682-001	.000	.682-001	.857+002
260.0	329.7	24773.1	25.97	15.00	.054+002	.470-005	.123+005	162.3	.571-001	.000	.571-001	.863+002
270.0	336.2	24752.3	25.36	15.00	.012+002	.395-005	.123+005	136.0	.480-001	.000	.480-001	.868+002
280.0	342.7	24734.8	24.79	15.00	.032+002	.333-005	.123+005	111.1	.405-001	.000	.405-001	.873+002
290.0	349.4	24720.1	24.24	15.00	.044+002	.283-005	.123+005	88.4	.344-001	.000	.344-001	.877+002
300.0	356.2	24707.0	23.72	15.00	.071+002	.243-005	.123+005	68.0	.296-001	.000	.296-001	.880+002
310.0	363.2	24694.8	22.95	15.00	.120+002	.209-005	.123+005	48.5	.255-001	.000	.255-001	.883+002
320.0	370.2	24683.3	22.07	15.00	.006+001	.176-005	.123+005	27.2	.214-001	.000	.214-001	.885+002
330.0	377.4	24672.6	21.27	15.00	.055+001	.150-005	.123+005	8.1	.183-001	.000	.183-001	.887+002
340.0	384.8	24662.1	20.53	15.00	.090+001	.128-005	.123+005	-10.0	.156-001	.000	.156-001	.889+002
350.0	392.2	24651.8	19.86	15.00	.081+001	.111-005	.123+005	-25.8	.135-001	.000	.135-001	.890+002
360.0	399.7	24641.6	18.79	15.00	.089+001	.937-006	.123+005	-43.7	.114-001	.000	.114-001	.891+002

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BOEING LIFTING BRAKE TRAJ (5XGE0) CONVECTIVE PAYLOAD ENV.

B.P. NO. 50010

TIME SEC	ALT KFT	VEL FT/SEC	MACH NO	ANGLE ATTACK	REYNOLDS NO./FT	HEAT COEF LBM/SF ² -S	PEC ENTHALPY BTU/LBM	RAD E COIL DEG F	CONV RATE BTU/SFT-S	RAD RATE BTU/SFT-S	TOT RATE BTU/SFT-S	HEAT LOAD BTU/SFT
4.0	389.0	34172.3	27.92	15.00	.447+001	.150-005	.235+005	90.8	.351-001	.000	.351-001	.000
17.0	373.5	34184.6	30.06	15.00	.941+001	.205-005	.235+005	135.5	.479-001	.000	.479-001	.249+000
18.0	358.9	34194.4	32.57	15.00	.207+002	.293-005	.234+005	190.3	.681-001	.000	.681-001	.597+000
22.0	345.2	34200.7	33.99	15.00	.424+002	.409-005	.234+005	246.8	.950-001	.000	.950-001	.109+001
23.0	332.5	34202.4	35.50	15.00	.681+002	.568-005	.234+005	307.2	.132+000	.000	.132+000	.177+001
34.0	321.1	34189.8	36.37	15.00	.169+003	.903-005	.236+005	403.1	.211+000	.000	.211+000	.280+001
43.0	310.7	34158.5	37.22	15.00	.314+003	.105-004	.234+005	434.2	.244+000	.000	.244+000	.416+001
45.0	302.6	34115.9	37.89	15.00	.517+003	.133-004	.233+005	487.5	.307+000	.000	.307+000	.554+001
53.0	295.5	34038.4	38.49	15.00	.816+003	.164-004	.232+005	537.3	.377+000	.000	.377+000	.725+001
55.0	289.0	33920.3	38.37	15.00	.117+004	.167-004	.230+005	581.6	.448+000	.000	.448+000	.931+001
63.0	283.1	33775.1	38.21	15.00	.163+004	.234-004	.228+005	624.9	.528+000	.000	.528+000	.117+002
65.0	276.7	33540.5	37.94	15.00	.212+004	.263-004	.225+005	659.5	.598+000	.000	.598+000	.146+002
73.0	273.8	33265.1	37.63	15.00	.269+004	.298-004	.222+005	684.6	.654+000	.000	.654+000	.177+002
75.0	270.1	32928.3	37.25	15.00	.328+004	.336-004	.217+005	712.6	.720+000	.000	.720+000	.211+002
80.0	267.2	32514.5	36.78	15.00	.381+004	.361-004	.212+005	726.7	.755+000	.000	.755+000	.248+002
85.0	264.7	32067.1	36.28	15.00	.432+004	.384-004	.206+005	736.4	.780+000	.000	.780+000	.280+002
90.0	263.0	31562.6	35.71	15.00	.469+004	.398-004	.200+005	738.2	.785+000	.000	.785+000	.326+002
95.0	261.9	31040.6	35.06	15.00	.487+004	.403-004	.193+005	731.1	.767+000	.000	.767+000	.364+002
103.0	261.3	30506.8	34.38	15.00	.492+004	.402-004	.187+005	720.9	.741+000	.000	.741+000	.402+002
105.0	260.7	29973.1	33.71	15.00	.496+004	.399-004	.180+005	707.2	.707+000	.000	.707+000	.438+002
113.0	260.6	29453.6	33.12	15.00	.490+004	.393-004	.174+005	693.1	.673+000	.000	.673+000	.473+002
115.0	261.0	28963.5	32.61	15.00	.472+004	.382-004	.168+005	674.9	.632+000	.000	.632+000	.505+002
122.0	261.7	28487.1	32.14	15.00	.452+004	.371-004	.163+005	658.0	.595+000	.000	.595+000	.536+002
125.0	262.7	28063.2	31.75	15.00	.424+004	.355-004	.158+005	637.2	.552+000	.000	.552+000	.565+002
133.0	263.9	27663.1	31.29	15.00	.391+004	.338-004	.154+005	616.8	.512+000	.000	.512+000	.591+002
135.0	265.3	27298.9	30.88	15.00	.357+004	.301-004	.149+005	577.5	.441+000	.000	.441+000	.615+002
140.0	266.9	26981.4	30.52	15.00	.322+004	.304-004	.146+005	574.7	.436+000	.000	.436+000	.637+002
145.0	268.6	26686.3	30.19	15.00	.290+004	.286-004	.143+005	553.8	.402+000	.000	.402+000	.658+002
153.0	270.5	26433.7	29.90	15.00	.258+004	.268-004	.140+005	532.1	.369+000	.000	.369+000	.677+002
155.0	272.5	26208.9	29.65	15.00	.228+004	.250-004	.138+005	511.6	.339+000	.000	.339+000	.695+002
163.0	274.6	26002.8	29.42	15.00	.202+004	.234-004	.136+005	492.2	.313+000	.000	.313+000	.711+002
173.0	279.1	25682.6	29.05	15.00	.154+004	.203-004	.132+005	452.2	.264+000	.000	.264+000	.740+002
183.0	283.9	25436.6	28.78	15.00	.117+004	.174-004	.130+005	414.4	.223+000	.000	.223+000	.765+002
193.0	289.0	25249.3	28.56	15.00	.871+003	.150-004	.128+005	379.4	.189+000	.000	.189+000	.785+002
203.0	294.4	25119.0	28.42	15.00	.642+003	.129-004	.127+005	346.9	.161+000	.000	.161+000	.803+002
213.0	299.8	25006.2	27.97	15.00	.453+003	.110-004	.126+005	313.9	.137+000	.000	.137+000	.818+002
223.0	305.5	24930.7	27.50	15.00	.315+003	.926-005	.125+005	279.9	.114+000	.000	.114+000	.830+002
233.0	311.3	24874.0	27.06	15.00	.220+003	.783-005	.124+005	248.2	.958-001	.000	.958-001	.841+002
243.0	317.3	24830.9	26.64	15.00	.154+003	.661-005	.124+005	218.9	.809-001	.000	.809-001	.849+002
253.0	323.5	24798.8	26.24	15.00	.107+003	.557-005	.124+005	190.6	.682-001	.000	.682-001	.857+002
260.0	329.7	24773.1	25.97	15.00	.754+002	.470-005	.123+005	162.3	.571-001	.000	.571-001	.863+002
270.0	336.2	24752.3	25.36	15.00	.512+002	.395-005	.123+005	136.0	.480-001	.000	.480-001	.868+002
280.0	342.7	24734.8	24.79	15.00	.352+002	.333-005	.123+005	111.1	.405-001	.000	.405-001	.873+002
290.0	349.4	24720.1	24.24	15.00	.244+002	.283-005	.123+005	88.4	.344-001	.000	.344-001	.877+002
300.0	356.2	24707.6	23.72	15.00	.171+002	.243-005	.123+005	68.0	.296-001	.000	.296-001	.880+002
313.0	363.2	24694.8	22.95	15.00	.120+002	.209-005	.123+005	48.5	.255-001	.000	.255-001	.883+002
323.0	370.2	24683.3	22.07	15.00	.806+001	.176-005	.123+005	27.2	.214-001	.000	.214-001	.885+002
330.0	377.4	24672.6	21.27	15.00	.555+001	.150-005	.123+005	8.1	.183-001	.000	.183-001	.887+002
340.0	384.8	24662.1	20.53	15.00	.390+001	.128-005	.123+005	-10.0	.156-001	.000	.156-001	.889+002
350.0	392.2	24651.8	19.86	15.00	.281+001	.111-005	.123+005	-25.8	.135-001	.000	.135-001	.890+002
363.0	399.7	24641.6	18.79	15.00	.189+001	.937-006	.123+005	-43.7	.114-001	.000	.114-001	.891+002

ORIGINAL PAGE IS
OF POOR QUALITY

BOEING LIFTING BRAKE TRAJ (5XGE0) CONVECTIVE PAYLOAD ENV.

B.P. NO. 50013

TIME SEC	ALT KFT	VEL FT/SEC	PACH NO	ANGLE ATTACK	REYNOLDS NO./FT	HEAT COEF LBM/SFT-S	REC ENTHALPY BTU/LBM	PAD E LUIL DEG F	CONV RATE BTU/SFT-S	RAD RATE BTU/SFT-S	TOT RATE BTU/SFT-S	HEAT LOAD BTU/SFT
4.0	389.0	34172.3	27.92	15.00	.447+001	.150-005	.235+005	90.8	.351-001	.000	.351-001	.000
13.0	373.5	34184.6	30.06	15.00	.941+001	.205-005	.235+005	135.5	.479-001	.000	.479-001	.249+000
16.0	358.9	34194.4	32.57	15.00	.207+002	.293-005	.234+005	190.3	.681-001	.000	.681-001	.597+000
22.0	345.2	34200.7	33.99	15.00	.424+002	.409-005	.234+005	246.8	.950-001	.000	.950-001	.109+001
28.0	332.5	34202.4	35.50	15.00	.681+002	.568-005	.234+005	307.2	.132+000	.000	.132+000	.177+001
34.0	321.1	34189.8	36.77	15.00	.169+003	.903-005	.236+005	403.1	.211+000	.000	.211+000	.280+001
43.0	310.7	34158.5	37.22	15.00	.314+003	.105-004	.234+005	434.2	.244+000	.000	.244+000	.416+001
45.0	302.6	34115.9	37.89	15.00	.517+003	.133-004	.233+005	487.5	.307+000	.000	.307+000	.554+001
53.0	295.5	34038.4	38.49	15.00	.816+003	.164-004	.232+005	537.3	.377+000	.000	.377+000	.725+001
55.0	289.0	33920.3	38.37	15.00	.117+004	.197-004	.236+005	581.6	.448+000	.000	.448+000	.931+001
63.0	283.1	33775.1	38.21	15.00	.163+004	.234-004	.228+005	624.9	.528+000	.000	.528+000	.117+002
65.0	278.2	33540.5	37.94	15.00	.212+004	.264-004	.225+005	659.5	.598+000	.000	.598+000	.146+002
73.0	273.8	33265.1	37.63	15.00	.269+004	.298-004	.222+005	684.6	.654+000	.000	.654+000	.177+002
75.0	270.1	32928.3	37.25	15.00	.328+004	.336-004	.217+005	712.6	.720+000	.000	.720+000	.211+002
83.0	267.2	32514.5	36.78	15.00	.381+004	.361-004	.212+005	726.7	.755+000	.000	.755+000	.248+002
85.0	264.7	32067.1	36.28	15.00	.432+004	.384-004	.208+005	736.4	.780+000	.000	.780+000	.287+002
93.0	263.0	31562.6	35.71	15.00	.469+004	.398-004	.200+005	738.2	.785+000	.000	.785+000	.326+002
95.0	261.9	31040.6	35.06	15.00	.487+004	.403-004	.193+005	731.1	.767+000	.000	.767+000	.364+002
100.0	261.3	30506.8	34.38	15.00	.492+004	.402-004	.187+005	720.9	.741+000	.000	.741+000	.402+002
105.0	260.7	29973.1	33.71	15.00	.496+004	.399-004	.180+005	707.4	.707+000	.000	.707+000	.438+002
110.0	260.6	29453.8	33.12	15.00	.490+004	.393-004	.174+005	693.1	.673+000	.000	.673+000	.473+002
115.0	261.0	28963.5	32.61	15.00	.472+004	.382-004	.168+005	674.9	.632+000	.000	.632+000	.505+002
120.0	261.7	28487.1	32.14	15.00	.452+004	.371-004	.163+005	658.0	.595+000	.000	.595+000	.536+002
125.0	262.7	28063.2	31.75	15.00	.424+004	.355-004	.158+005	637.2	.552+000	.000	.552+000	.565+002
130.0	263.9	27663.1	31.29	15.00	.391+004	.338-004	.154+005	616.8	.512+000	.000	.512+000	.591+002
135.0	265.3	27298.9	30.88	15.00	.357+004	.301-004	.149+005	577.5	.441+000	.000	.441+000	.615+002
140.0	266.9	26981.4	30.52	15.00	.322+004	.304-004	.146+005	574.7	.436+000	.000	.436+000	.637+002
145.0	268.6	26686.3	30.19	15.00	.290+004	.286-004	.143+005	553.8	.402+000	.000	.402+000	.658+002
150.0	270.5	26433.7	29.90	15.00	.258+004	.268-004	.140+005	532.1	.369+000	.000	.369+000	.677+002
155.0	272.5	26206.9	29.65	15.00	.228+004	.250-004	.138+005	511.6	.339+000	.000	.339+000	.695+002
160.0	274.6	26002.8	29.42	15.00	.202+004	.234-004	.136+005	492.2	.313+000	.000	.313+000	.711+002
170.0	279.1	25662.6	29.05	15.00	.154+004	.203-004	.132+005	452.2	.264+000	.000	.264+000	.740+002
180.0	283.9	25436.6	28.78	15.00	.117+004	.174-004	.130+005	414.4	.223+000	.000	.223+000	.765+002
190.0	289.0	25249.3	28.56	15.00	.871+003	.150-004	.128+005	379.4	.189+000	.000	.189+000	.785+002
200.0	294.4	25119.0	28.42	15.00	.642+003	.129-004	.127+005	346.9	.161+000	.000	.161+000	.803+002
210.0	299.8	25006.2	27.97	15.00	.453+003	.110-004	.126+005	313.9	.137+000	.000	.137+000	.818+002
220.0	305.5	24930.7	27.50	15.00	.315+003	.926-005	.125+005	279.9	.114+000	.000	.114+000	.830+002
230.0	311.3	24874.0	27.06	15.00	.220+003	.783-005	.124+005	248.2	.958-001	.000	.958-001	.841+002
240.0	317.3	24830.9	26.64	15.00	.154+003	.661-005	.124+005	213.9	.809-001	.000	.809-001	.849+002
250.0	323.5	24798.8	26.24	15.00	.107+003	.557-005	.124+005	190.6	.682-001	.000	.682-001	.857+002
260.0	329.7	24773.1	25.97	15.00	.754+002	.470-005	.123+005	162.3	.571-001	.000	.571-001	.863+002
270.0	336.2	24752.3	25.36	15.00	.512+002	.345-005	.123+005	136.0	.480-001	.000	.480-001	.868+002
280.0	342.7	24734.8	24.79	15.00	.352+002	.333-005	.123+005	111.1	.405-001	.000	.405-001	.873+002
290.0	349.4	24720.1	24.24	15.00	.244+002	.283-005	.123+005	88.4	.344-001	.000	.344-001	.877+002
300.0	356.2	24707.0	23.72	15.00	.171+002	.243-005	.123+005	68.0	.296-001	.000	.296-001	.880+002
310.0	363.2	24694.8	22.95	15.00	.120+002	.209-005	.123+005	48.5	.255-001	.000	.255-001	.883+002
320.0	370.2	24683.3	22.07	15.00	.086+001	.176-005	.123+005	27.2	.214-001	.000	.214-001	.885+002
330.0	377.4	24672.6	21.27	15.00	.555+001	.150-005	.123+005	8.1	.183-001	.000	.183-001	.887+002
340.0	384.9	24662.1	20.53	15.00	.390+001	.128-005	.123+005	-10.0	.156-001	.000	.156-001	.889+002
350.0	392.2	24651.8	19.86	15.00	.281+001	.111-005	.123+005	-25.8	.135-001	.000	.135-001	.890+002
360.0	399.7	24641.6	19.79	15.00	.189+001	.937-006	.123+005	-43.7	.114-001	.000	.114-001	.891+002

ORIGINAL PAGE IS
OF POOR QUALITY

BOEING LIFTING BRACE TRAJ (5X6LO) CONVECTIVE PAYLOAD ENV.

R.P. NO. 50015

TIME SEC	ALT KFT	VEL FT/SEC	MACH NO	ANGLE ATTACK	REYNOLDS NO./FT	HEAT COEFF LBM/SFT-S	REF ENTHALPY BTU/LBM	RAD EMISS DEG F	CONV RATE BTU/SFT-S	RAD RATE BTU/SFT-S	TOT RATE BTU/SFT-S	HEAT LOAD BTU/SFT
4.0	389.0	34172.3	27.92	15.00	.447+001	.235-005	.235+005	156.2	.549-001	.000	.549-001	.000
10.0	373.5	34184.6	30.06	15.00	.941+001	.321-005	.235+005	206.0	.749-001	.000	.749-001	.389+000
16.0	358.9	34194.4	32.57	15.00	.207+002	.458-005	.234+005	267.0	.106+000	.000	.106+000	.933+000
22.0	345.2	34200.7	33.99	15.00	.424+002	.639-005	.234+005	330.0	.148+000	.000	.148+000	.170+001
28.0	332.5	34202.4	35.50	15.00	.881+002	.888-005	.234+005	397.6	.206+000	.000	.206+000	.276+001
34.0	321.1	34189.8	36.37	15.00	.169+003	.141-004	.236+005	504.5	.330+000	.000	.330+000	.437+001
40.0	310.7	34158.5	37.22	15.00	.314+003	.164-004	.234+005	539.4	.380+000	.000	.380+000	.650+001
45.0	302.6	34115.9	37.89	15.00	.517+003	.207-004	.233+005	598.0	.477+000	.000	.477+000	.864+001
50.0	295.5	34038.4	38.49	15.00	.616+003	.257-004	.232+005	655.5	.590+000	.000	.590+000	.113+002
55.0	289.0	33920.3	38.37	15.00	.117+004	.308-004	.230+005	704.4	.700+000	.000	.700+000	.145+002
60.0	283.1	33775.1	38.21	15.00	.163+004	.366-004	.228+005	752.9	.824+000	.000	.824+000	.183+002
65.0	278.2	33540.5	37.94	15.00	.212+004	.420-004	.225+005	791.0	.933+000	.000	.933+000	.227+002
70.0	273.8	33265.1	37.63	15.00	.269+004	.465-004	.222+005	818.8	.102+001	.000	.102+001	.276+002
75.0	270.1	32928.3	37.25	15.00	.328+004	.515-004	.217+005	850.5	.112+001	.000	.112+001	.330+002
80.0	267.2	32514.5	36.78	15.00	.381+004	.565-004	.212+005	866.8	.118+001	.000	.118+001	.387+002
85.0	264.7	32067.1	36.28	15.00	.432+004	.599-004	.206+005	876.6	.122+001	.000	.122+001	.447+002
90.0	263.0	31562.6	35.71	15.00	.469+004	.621-004	.200+005	878.6	.122+001	.000	.122+001	.508+002
95.0	261.9	31040.6	35.06	15.00	.487+004	.629-004	.193+005	870.8	.119+001	.000	.119+001	.568+002
100.0	261.3	30506.8	34.38	15.00	.492+004	.628-004	.187+005	859.9	.115+001	.000	.115+001	.627+002
105.0	260.7	29977.1	33.71	15.00	.496+004	.624-004	.180+005	844.9	.110+001	.000	.110+001	.684+002
110.0	260.6	29453.8	33.12	15.00	.490+004	.614-004	.174+005	828.6	.105+001	.000	.105+001	.738+002
115.0	261.0	28963.5	32.61	15.00	.472+004	.596-004	.168+005	807.7	.984+000	.000	.984+000	.788+002
120.0	261.7	28487.1	32.14	15.00	.452+004	.579-004	.163+005	789.0	.927+000	.000	.927+000	.836+002
125.0	262.7	28063.2	31.75	15.00	.424+004	.555-004	.158+005	766.2	.861+000	.000	.861+000	.881+002
130.0	263.9	27663.1	31.29	15.00	.391+004	.529-004	.154+005	743.8	.800+000	.000	.800+000	.922+002
135.0	265.3	27298.9	30.88	15.00	.357+004	.470-004	.149+005	699.2	.688+000	.000	.688+000	.960+002
140.0	266.9	26981.4	30.52	15.00	.322+004	.474-004	.146+005	695.7	.679+000	.000	.679+000	.994+002
145.0	268.6	26686.3	30.19	15.00	.290+004	.446-004	.143+005	672.3	.626+000	.000	.626+000	.103+003
150.0	270.5	26433.7	29.90	15.00	.258+004	.418-004	.140+005	648.2	.574+000	.000	.574+000	.106+003
155.0	272.5	26208.9	29.65	15.00	.228+004	.391-004	.138+005	626.0	.530+000	.000	.530+000	.108+003
160.0	274.6	26002.8	29.42	15.00	.202+004	.366-004	.136+005	604.3	.489+000	.000	.489+000	.111+003
170.0	279.1	25682.6	29.05	15.00	.154+004	.317-004	.132+005	559.2	.411+000	.000	.411+000	.115+003
180.0	283.9	25436.6	28.78	15.00	.117+004	.273-004	.130+005	518.2	.349+000	.000	.349+000	.119+003
190.0	289.0	25249.3	28.56	15.00	.071+003	.235-004	.128+005	478.7	.296+000	.000	.296+000	.122+003
200.0	294.4	25119.0	28.42	15.00	.042+003	.202-004	.127+005	442.2	.252+000	.000	.252+000	.125+003
210.0	299.8	25006.2	27.97	15.00	.453+003	.171-004	.126+005	403.8	.212+000	.000	.212+000	.128+003
220.0	305.5	24930.7	27.50	15.00	.315+003	.145-004	.125+005	367.4	.178+000	.000	.178+000	.129+003
230.0	311.3	24874.0	27.06	15.00	.220+003	.122-004	.124+005	330.9	.149+000	.000	.149+000	.131+003
240.0	317.3	24830.9	26.64	15.00	.154+003	.103-004	.124+005	298.3	.126+000	.000	.126+000	.132+003
250.0	323.5	24798.8	26.24	15.00	.107+003	.071-005	.124+005	267.3	.107+000	.000	.107+000	.134+003
260.0	329.7	24773.1	25.97	15.00	.074+002	.735-005	.123+005	235.7	.892-001	.000	.892-001	.135+003
270.0	336.2	24752.3	25.36	15.00	.012+002	.618-005	.123+005	206.3	.750-001	.000	.750-001	.135+003
280.0	342.7	24734.6	24.79	15.00	.352+002	.510-005	.123+005	178.2	.632-001	.000	.632-001	.136+003
290.0	349.4	24720.1	24.24	15.00	.244+002	.442-005	.123+005	152.9	.537-001	.000	.537-001	.137+003
300.0	356.2	24707.0	23.72	15.00	.171+002	.379-005	.123+005	129.8	.461-001	.000	.461-001	.137+003
310.0	363.2	24684.8	22.95	15.00	.120+002	.326-005	.123+005	108.1	.397-001	.000	.397-001	.138+003
320.0	370.2	24663.3	22.07	15.00	.066+001	.276-005	.123+005	85.0	.336-001	.000	.336-001	.138+003
330.0	377.4	24642.6	21.27	15.00	.055+001	.234-005	.123+005	63.0	.285-001	.000	.285-001	.138+003
340.0	384.8	24662.1	20.53	15.00	.090+001	.201-005	.123+005	43.6	.245-001	.000	.245-001	.139+003
350.0	392.2	24651.8	19.86	15.00	.281+001	.172-005	.123+005	25.1	.211-001	.000	.211-001	.139+003
360.0	399.7	24641.6	19.79	15.00	.189+001	.146-005	.123+005	5.0	.178-001	.000	.178-001	.139+003

ORIGINAL PAGE IS
OF POOR QUALITY

BEING LIFTING BRAKE TRAJ (5XGLE) CONVECTIVE PAYLOAD FRV.

B.P. NO. 50017

TIME SEC	ALT KFT	VCL FT/SEC	WACH NO	ANGLE ATTACK	PEYKOLUS NO./FT	HEAT COFF LBM/FT-S	REC ENTHALPY BTU/LBM	PAN FUEL DEG F	CONV RATE BTU/FT-S	RAD RATE BTU/FT-S	TOT RATE BTU/FT-S	HEAT LOAD BTU/FT
4.0	389.0	34172.3	27.92	15.00	.447+001	.352-005	.235+005	221.5	.822-001	.000	.822-001	.000
10.0	373.5	34184.6	30.06	15.00	.441+001	.481-005	.235+005	276.8	.112+000	.000	.112+000	.563+000
16.0	358.9	34194.4	32.57	15.00	.207+002	.687-005	.234+005	344.4	.159+000	.000	.159+000	.140+001
22.0	345.2	34200.7	33.99	15.00	.424+002	.958-005	.234+005	414.0	.222+000	.000	.222+000	.254+001
28.0	332.5	34202.4	35.50	15.00	.981+002	.133-004	.234+005	488.5	.308+000	.000	.308+000	.413+001
34.0	321.1	34189.8	36.37	15.00	.169+003	.212-004	.236+005	607.8	.495+000	.000	.495+000	.654+001
40.0	310.7	34158.5	37.22	15.00	.314+003	.246-004	.234+005	645.8	.569+000	.000	.569+000	.974+001
46.0	302.6	34115.9	37.89	15.00	.517+003	.311-004	.233+005	711.0	.716+000	.000	.716+000	.130+002
52.0	295.5	34038.4	38.49	15.00	.616+003	.385-004	.232+005	773.7	.882+000	.000	.882+000	.169+002
58.0	289.0	33920.3	38.37	15.00	.117+004	.462-004	.230+005	828.2	.105+001	.000	.105+001	.218+002
64.0	283.1	33775.1	38.21	15.00	.163+004	.539-004	.228+005	881.8	.123+001	.000	.123+001	.275+002
70.0	278.2	33540.5	37.94	15.00	.212+004	.630-004	.225+005	924.0	.140+001	.000	.140+001	.341+002
76.0	273.8	33265.1	37.63	15.00	.269+004	.698-004	.222+005	955.0	.153+001	.000	.153+001	.414+002
82.0	270.1	32928.3	37.25	15.00	.328+004	.787-004	.217+005	989.5	.168+001	.000	.168+001	.494+002
88.0	267.2	32514.5	36.78	15.00	.381+004	.847-004	.212+005	1007.6	.177+001	.000	.177+001	.580+002
94.0	264.7	32067.1	36.28	15.00	.432+004	.899-004	.206+005	1018.7	.182+001	.000	.182+001	.670+002
100.0	263.0	31562.6	35.71	15.00	.469+004	.932-004	.200+005	1021.0	.183+001	.000	.183+001	.761+002
106.0	261.9	31040.6	35.06	15.00	.487+004	.944-004	.193+005	1012.3	.179+001	.000	.179+001	.852+002
112.0	261.3	30506.8	34.38	15.00	.492+004	.942-004	.187+005	999.8	.173+001	.000	.173+001	.940+002
118.0	260.7	29973.1	33.71	15.00	.496+004	.936-004	.180+005	983.5	.165+001	.000	.165+001	.102+003
124.0	260.6	29453.8	33.12	15.00	.490+004	.921-004	.174+005	965.4	.157+001	.000	.157+001	.110+003
130.0	261.0	28933.5	32.61	15.00	.472+004	.894-004	.168+005	942.7	.147+001	.000	.147+001	.118+003
136.0	261.7	28487.1	32.14	15.00	.452+004	.869-004	.163+005	921.8	.139+001	.000	.139+001	.125+003
142.0	262.7	28063.2	31.75	15.00	.424+004	.833-004	.158+005	896.6	.129+001	.000	.129+001	.132+003
148.0	263.9	27663.1	31.29	15.00	.391+004	.793-004	.154+005	871.4	.120+001	.000	.120+001	.138+003
154.0	265.3	27298.9	30.88	15.00	.357+004	.706-004	.149+005	822.7	.103+001	.000	.103+001	.144+003
160.0	266.9	26981.4	30.52	15.00	.322+004	.711-004	.146+005	818.3	.102+001	.000	.102+001	.149+003
166.0	268.6	26686.3	30.19	15.00	.290+004	.670-004	.143+005	792.9	.938+000	.000	.938+000	.154+003
172.0	270.5	26433.7	29.90	15.00	.258+004	.628-004	.140+005	766.3	.861+000	.000	.861+000	.158+003
178.0	272.5	26208.9	29.65	15.00	.228+004	.567-004	.138+005	741.5	.794+000	.000	.794+000	.162+003
184.0	274.6	26002.5	29.42	15.00	.202+004	.547-004	.136+005	716.8	.730+000	.000	.730+000	.166+003
190.0	279.1	25682.6	29.05	15.00	.154+004	.475-004	.132+005	667.1	.614+000	.000	.614+000	.173+003
196.0	283.9	25436.6	28.78	15.00	.117+004	.409-004	.130+005	621.7	.521+000	.000	.521+000	.179+003
202.0	289.0	25249.3	28.56	15.00	.871+003	.353-004	.128+005	578.7	.443+000	.000	.443+000	.183+003
208.0	294.4	25119.0	28.42	15.00	.642+003	.303-004	.127+005	538.0	.378+000	.000	.378+000	.188+003
214.0	299.8	25006.2	27.97	15.00	.453+003	.257-004	.126+005	496.0	.318+000	.000	.318+000	.191+003
220.0	305.5	24930.7	27.50	15.00	.315+003	.217-004	.125+005	454.7	.267+000	.000	.267+000	.194+003
226.0	311.3	24874.0	27.06	15.00	.220+003	.184-004	.124+005	416.1	.224+000	.000	.224+000	.196+003
232.0	317.3	24830.9	26.64	15.00	.154+003	.155-004	.124+005	379.5	.189+000	.000	.189+000	.198+003
238.0	323.5	24798.8	26.24	15.00	.107+003	.131-004	.124+005	345.1	.160+000	.000	.160+000	.200+003
244.0	329.7	24773.1	25.97	15.00	.754+002	.110-004	.123+005	309.2	.133+000	.000	.133+000	.202+003
250.0	336.2	24752.3	25.36	15.00	.512+002	.926-005	.123+005	276.9	.112+000	.000	.112+000	.203+003
256.0	342.7	24734.8	24.79	15.00	.352+002	.781-005	.123+005	246.3	.948-001	.000	.948-001	.204+003
262.0	349.4	24720.1	24.24	15.00	.244+002	.663-005	.123+005	219.1	.805-001	.000	.805-001	.205+003
268.0	356.2	24707.0	23.72	15.00	.171+002	.569-005	.123+005	192.7	.691-001	.000	.691-001	.206+003
274.0	363.2	24694.8	23.05	15.00	.120+002	.489-005	.123+005	168.5	.594-001	.000	.594-001	.206+003
280.0	370.2	24683.3	22.07	15.00	.806+001	.413-005	.123+005	142.6	.502-001	.000	.502-001	.207+003
286.0	377.4	24672.6	21.27	15.00	.555+001	.351-005	.123+005	118.7	.427-001	.000	.427-001	.207+003
292.0	384.8	24662.1	20.53	15.00	.390+001	.301-005	.123+005	96.9	.366-001	.000	.366-001	.208+003
298.0	392.2	24651.6	19.86	15.00	.281+001	.260-005	.123+005	76.9	.317-001	.000	.317-001	.208+003
304.0	399.7	24641.6	18.79	15.00	.189+001	.220-005	.123+005	55.0	.268-001	.000	.268-001	.208+003

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BOEING LIFTING BRAKE TRAJ (5X6E0) CONVECTIVE PAYLOAD ENV.

B.P. NO. 50021

TIME SEC	ALT KFT	VFL FT/SEC	MACH NO	ANGLE ATTACK	REYNOLDS NO./FT	HEAT COEF LBH/SFT-S	REC ENTHALPY BTU/LBM	RAD E COIL DEG F	CONV RATE BTU/SFT-S	RAD RATE BTU/SFT-S	TOT RATE BTU/SFT-S	HEAT LOAD BTU/SFT
4.0	369.0	34172.3	27.92	15.00	.447+001	.106-004	.235+005	437.3	.247+000	.000	.247+000	.000
1.0	373.5	34184.6	30.06	15.00	.441+001	.144-004	.235+005	508.6	.335+000	.000	.335+000	.175+001
16.0	358.9	34194.4	32.57	15.00	.207+002	.206-004	.234+005	597.9	.477+000	.000	.477+000	.418+001
22.0	345.2	34200.7	33.99	15.00	.424+002	.247-004	.234+005	689.1	.664+000	.000	.664+000	.760+001
28.0	332.5	34202.4	35.50	15.00	.881+002	.400-004	.234+005	788.2	.924+000	.000	.924+000	.124+002
34.0	321.1	34149.8	36.37	15.00	.160+003	.635-004	.236+005	843.5	.148+001	.000	.148+001	.196+002
40.0	310.7	34158.5	37.22	15.00	.314+003	.738-004	.234+005	994.0	.170+001	.000	.170+001	.291+002
46.0	302.6	34115.9	37.89	15.00	.517+003	.933-004	.233+005	1079.7	.214+001	.000	.214+001	.387+002
50.0	295.5	34038.4	38.49	15.00	.616+003	.115-003	.232+005	1160.3	.262+001	.000	.262+001	.506+002
55.0	289.0	33920.3	38.37	15.00	.117+004	.139-003	.230+005	1234.8	.314+001	.000	.314+001	.650+002
60.0	283.1	33775.1	38.21	15.00	.163+004	.165-003	.228+005	1304.8	.369+001	.000	.369+001	.821+002
65.0	278.2	33540.5	37.94	15.00	.212+004	.189-003	.225+005	1359.3	.417+001	.000	.417+001	.107+003
70.0	273.8	33265.1	37.63	15.00	.269+004	.209-003	.222+005	1399.1	.455+001	.000	.455+001	.124+003
75.0	270.1	32928.3	37.25	15.00	.328+004	.236-003	.217+005	1445.1	.502+001	.000	.502+001	.148+003
80.0	267.2	32514.5	36.78	15.00	.381+004	.254-003	.212+005	1468.8	.527+001	.000	.527+001	.173+003
85.0	264.7	32067.1	36.28	15.00	.432+004	.270-003	.206+005	1484.1	.544+001	.000	.544+001	.200+003
9.0	263.0	31562.6	35.71	15.00	.469+004	.280-003	.200+005	1487.7	.547+001	.000	.547+001	.227+003
95.0	261.9	31040.6	35.06	15.00	.487+004	.283-003	.193+005	1474.6	.533+001	.000	.533+001	.254+003
100.0	261.3	30506.8	34.38	15.00	.492+004	.283-003	.187+005	1459.1	.517+001	.000	.517+001	.281+003
105.0	260.7	29973.1	33.71	15.00	.496+004	.281-003	.180+005	1437.2	.493+001	.000	.493+001	.306+003
110.0	260.6	29453.8	33.12	15.00	.490+004	.276-003	.174+005	1412.5	.468+001	.000	.468+001	.330+003
115.0	261.0	28963.5	32.61	15.00	.472+004	.268-003	.168+005	1382.3	.439+001	.000	.439+001	.353+003
120.0	261.7	28447.1	32.14	15.00	.452+004	.261-003	.163+005	1356.2	.414+001	.000	.414+001	.374+003
125.0	262.7	28063.2	31.75	15.00	.424+004	.250-003	.158+005	1322.7	.385+001	.000	.385+001	.394+003
130.0	263.9	27663.1	31.29	15.00	.391+004	.238-003	.154+005	1289.6	.357+001	.000	.357+001	.412+003
135.0	265.3	27298.9	30.88	15.00	.357+004	.212-003	.149+005	1225.8	.308+001	.000	.308+001	.429+003
140.0	266.9	26981.4	30.52	15.00	.322+004	.213-003	.146+005	1219.0	.303+001	.000	.303+001	.444+003
145.0	268.6	26686.3	30.19	15.00	.280+004	.201-003	.143+005	1186.2	.280+001	.000	.280+001	.459+003
150.0	270.5	26433.7	29.90	15.00	.258+004	.188-003	.140+005	1150.4	.256+001	.000	.256+001	.472+003
155.0	272.5	26208.9	29.65	15.00	.228+004	.176-003	.134+005	1118.4	.236+001	.000	.236+001	.484+003
160.0	274.6	26002.8	29.42	15.00	.202+004	.165-003	.136+005	1087.6	.218+001	.000	.218+001	.496+003
170.0	279.1	25642.6	29.05	15.00	.154+004	.142-003	.132+005	1019.6	.183+001	.000	.183+001	.516+003
180.0	283.9	25436.6	28.78	15.00	.117+004	.123-003	.130+005	962.2	.156+001	.000	.156+001	.533+003
190.0	289.0	25249.3	28.56	15.00	.871+003	.106-003	.128+005	905.2	.132+001	.000	.132+001	.547+003
200.0	294.4	25119.0	28.42	15.00	.642+003	.908-004	.127+005	851.1	.113+001	.000	.113+001	.559+003
210.0	299.8	25006.2	27.97	15.00	.453+003	.772-004	.126+005	796.8	.950+000	.000	.950+000	.570+003
220.0	305.5	24930.7	27.50	15.00	.315+003	.651-004	.125+005	742.2	.795+000	.000	.795+000	.579+003
230.0	311.3	24874.0	27.06	15.00	.220+003	.551-004	.124+005	691.0	.668+000	.000	.668+000	.586+003
240.0	317.3	24830.9	26.64	15.00	.154+003	.465-004	.124+005	643.5	.565+000	.000	.565+000	.592+003
250.0	323.5	24798.8	26.24	15.00	.107+003	.392-004	.124+005	597.6	.476+000	.000	.476+000	.597+003
260.0	329.7	24773.1	25.97	15.00	.754+002	.331-004	.123+005	551.9	.399+000	.000	.399+000	.602+003
270.0	336.2	24752.3	25.36	15.00	.512+002	.278-004	.123+005	508.9	.336+000	.000	.336+000	.605+003
280.0	342.7	24734.6	24.79	15.00	.352+002	.234-004	.123+005	468.3	.283+000	.000	.283+000	.608+003
290.0	349.4	24720.1	24.24	15.00	.244+002	.199-004	.123+005	431.6	.241+000	.000	.241+000	.611+003
300.0	356.2	24707.0	23.72	15.00	.171+002	.171-004	.123+005	398.5	.207+000	.000	.207+000	.613+003
310.0	363.2	24694.8	23.25	15.00	.120+002	.147-004	.123+005	366.8	.178+000	.000	.178+000	.615+003
320.0	370.2	24683.3	22.07	15.00	.806+001	.124-004	.123+005	332.5	.150+000	.000	.150+000	.617+003
330.0	377.4	24672.6	21.27	15.00	.555+001	.105-004	.123+005	300.4	.127+000	.000	.127+000	.618+003
340.0	384.8	24662.1	20.53	15.00	.390+001	.903-005	.123+005	272.3	.110+000	.000	.110+000	.619+003
350.0	392.2	24651.8	19.86	15.00	.281+001	.789-005	.123+005	246.1	.947+001	.000	.947+001	.620+003
360.0	399.7	24641.6	19.79	15.00	.189+001	.659-005	.123+005	217.0	.800+001	.000	.800+001	.621+003

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BOILING LIFTING BRAKE TRAJ (5XGLO) CONVECTIVE PAYLOAD FNV.

R.P. NO. 50024

TIME SEC	ALT KFT	VFL FT/SEC	MACH NO	ANGLE ATTACK	REYNOLDS NO./FT	HEAT COFF LBM/SFT-S	REC ENTHALPY BTU/LBM	RAD E COIL DEG F	CONV RATE BTU/SFT-S	RAD RATE BTU/SFT-S	TOT RATE BTU/SFT-S	HEAT LOAD BTU/SFT
4.0	389.0	34172.3	27.92	15.00	.947+001	.148-004	.235+005	515.2	.344+000	.000	.344+000	.000
10.0	373.5	34184.6	30.06	15.00	.941+001	.202-004	.235+005	593.9	.470+000	.000	.470+000	.244+001
15.0	358.9	34194.4	32.57	15.00	.927+002	.288-004	.234+005	690.1	.666+000	.000	.666+000	.585+001
20.0	345.2	34200.7	33.99	15.00	.924+002	.402-004	.234+005	789.7	.929+000	.000	.929+000	.106+002
25.0	332.5	34202.4	35.50	15.00	.881+002	.559-004	.234+005	896.8	.129+001	.000	.129+001	.173+002
30.0	321.1	34189.8	36.37	15.00	.869+003	.889-004	.236+005	1066.2	.207+001	.000	.207+001	.274+002
35.0	310.7	34158.5	37.22	15.00	.814+003	.103-003	.234+005	1119.8	.237+001	.000	.237+001	.407+002
40.0	302.6	34115.9	37.85	15.00	.817+003	.131-003	.233+005	1215.5	.300+001	.000	.300+001	.541+002
45.0	295.5	34038.4	38.49	15.00	.816+003	.162-003	.232+005	1304.5	.369+001	.000	.369+001	.708+002
50.0	289.0	33920.3	38.37	15.00	.717+004	.194-003	.230+005	1381.4	.438+001	.000	.438+001	.910+002
55.0	283.1	32775.1	38.21	15.00	.663+004	.231-003	.228+005	1458.9	.516+001	.000	.516+001	.115+003
60.0	278.2	33540.5	37.94	15.00	.612+004	.265-003	.225+005	1518.9	.584+001	.000	.584+001	.142+003
65.0	273.8	33265.1	37.63	15.00	.569+004	.293-003	.222+005	1562.1	.637+001	.000	.637+001	.173+003
70.0	270.1	32928.3	37.25	15.00	.528+004	.331-003	.217+005	1612.3	.702+001	.000	.702+001	.206+003
75.0	267.2	32514.5	36.78	15.00	.481+004	.356-003	.212+005	1637.6	.737+001	.000	.737+001	.242+003
80.0	264.7	32087.1	36.28	15.00	.432+004	.378-003	.206+005	1653.6	.760+001	.000	.760+001	.280+003
85.0	263.0	31562.6	35.71	15.00	.469+004	.392-003	.200+005	1656.8	.765+001	.000	.765+001	.318+003
90.0	261.9	31040.6	35.06	15.00	.487+004	.347-003	.193+005	1644.3	.747+001	.000	.747+001	.356+003
95.0	261.3	30506.8	34.38	15.00	.492+004	.396-003	.187+005	1626.1	.721+001	.000	.721+001	.392+003
100.0	260.7	29973.1	33.71	15.00	.496+004	.393-003	.180+005	1602.0	.688+001	.000	.688+001	.428+003
105.0	260.6	29453.8	33.12	15.00	.490+004	.387-003	.174+005	1576.5	.655+001	.000	.655+001	.461+003
110.0	261.0	28963.5	32.61	15.00	.472+004	.378-003	.168+005	1543.9	.614+001	.000	.614+001	.493+003
115.0	261.7	28487.1	32.14	15.00	.452+004	.365-003	.163+005	1513.9	.578+001	.000	.578+001	.523+003
120.0	262.7	28063.2	31.75	15.00	.424+004	.350-003	.158+005	1478.0	.537+001	.000	.537+001	.551+003
125.0	263.9	27663.1	31.29	15.00	.391+004	.333-003	.154+005	1441.7	.498+001	.000	.498+001	.576+003
130.0	265.3	27298.9	30.88	15.00	.357+004	.296-003	.149+005	1371.4	.428+001	.000	.428+001	.600+003
135.0	266.9	26981.4	30.52	15.00	.322+004	.259-003	.146+005	1366.4	.424+001	.000	.424+001	.621+003
140.0	268.6	26686.3	30.19	15.00	.290+004	.281-003	.143+005	1329.0	.390+001	.000	.390+001	.641+003
145.0	270.5	26433.7	29.90	15.00	.258+004	.264-003	.140+005	1292.0	.359+001	.000	.359+001	.660+003
150.0	272.5	26208.9	29.65	15.00	.228+004	.247-003	.138+005	1257.0	.331+001	.000	.331+001	.677+003
155.0	274.6	26002.8	29.42	15.00	.202+004	.230-003	.136+005	1220.6	.304+001	.000	.304+001	.693+003
160.0	279.1	25682.6	29.05	15.00	.154+004	.199-003	.132+005	1148.9	.255+001	.000	.255+001	.721+003
165.0	283.9	25436.6	28.78	15.00	.117+004	.172-003	.130+005	1085.7	.217+001	.000	.217+001	.745+003
170.0	289.0	25249.3	28.56	15.00	.871+003	.148-003	.128+005	1023.2	.184+001	.000	.184+001	.765+003
175.0	294.4	25119.0	28.42	15.00	.842+003	.127-003	.127+005	965.1	.157+001	.000	.157+001	.782+003
180.0	299.8	25006.2	27.97	15.00	.453+003	.108-003	.126+005	906.1	.133+001	.000	.133+001	.796+003
185.0	305.5	24930.7	27.50	15.00	.315+003	.912-004	.125+005	847.3	.111+001	.000	.111+001	.809+003
190.0	311.3	24874.0	27.06	15.00	.220+003	.771-004	.124+005	791.3	.933+000	.000	.933+000	.819+003
195.0	317.3	24830.9	26.64	15.00	.154+003	.651-004	.124+005	739.8	.789+000	.000	.789+000	.827+003
200.0	323.5	24798.8	26.24	15.00	.107+003	.549-004	.124+005	690.0	.666+000	.000	.666+000	.835+003
205.0	329.7	24773.1	25.97	15.00	.754+002	.463-004	.123+005	640.0	.558+000	.000	.558+000	.841+003
210.0	336.2	24752.3	25.36	15.00	.512+002	.369-004	.123+005	593.4	.469+000	.000	.469+000	.846+003
215.0	342.7	24734.8	24.79	15.00	.352+002	.328-004	.123+005	549.6	.396+000	.000	.396+000	.850+003
220.0	349.4	24720.1	24.24	15.00	.244+002	.279-004	.123+005	509.8	.337+000	.000	.337+000	.854+003
225.0	356.2	24707.0	23.72	15.00	.171+002	.239-004	.123+005	473.2	.289+000	.000	.289+000	.857+003
230.0	363.2	24694.8	22.95	15.00	.120+002	.203-004	.123+005	438.2	.248+000	.000	.248+000	.860+003
235.0	370.2	24683.3	22.07	15.00	.806+001	.174-004	.123+005	402.3	.211+000	.000	.211+000	.862+003
240.0	377.4	24672.6	21.27	15.00	.555+001	.147-004	.123+005	366.8	.178+000	.000	.178+000	.864+003
245.0	384.8	24662.1	20.53	15.00	.390+001	.126-004	.123+005	335.7	.153+000	.000	.153+000	.866+003
250.0	392.2	24651.0	19.86	15.00	.281+001	.106-004	.123+005	307.5	.132+000	.000	.132+000	.867+003
255.0	399.7	24641.6	19.79	15.00	.189+001	.922-005	.123+005	276.1	.112+000	.000	.112+000	.868+003

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BOEING LIFTING BRAKE TRAJECTORY (5XGLO) CONVECTIVE PAYLOAD ENV.

B.P. NO. 50030

TIME SEC	ALT KFT	VEL FT/SEC	MACH NO	ANGLE ATTACK	REYNOLDS NO./FT	HEAT COEFF LBM/FT-S	SFC ENTHALPY BTU/LBM	RAO EQUIL DEG F	CONV RATE BTU/FT-S	RAO RATE BTU/FT-S	TOT RATE BTU/FT-S	HEAT LOAD BTU/FT
4.0	389.0	34172.3	27.92	15.00	.447+001	.117-004	.235+005	459.7	.272+000	.000	.272+000	.000
10.0	373.5	34184.6	30.06	15.00	.941+001	.160-004	.235+005	534.4	.372+000	.000	.372+000	.193+001
15.0	358.9	34194.4	32.57	15.00	.207+002	.229-004	.234+005	626.2	.530+000	.000	.530+000	.464+001
22.0	345.2	34200.7	33.99	15.00	.424+002	.319-004	.234+005	719.7	.738+000	.000	.738+000	.844+001
26.0	332.5	34202.4	35.50	15.00	.681+002	.444-004	.234+005	821.1	.103+001	.000	.103+001	.137+002
34.0	321.1	34180.6	36.37	15.00	.169+003	.706-004	.236+005	981.1	.164+001	.000	.164+001	.217+002
40.0	310.7	34158.5	37.22	15.00	.314+003	.820-004	.234+005	1032.6	.189+001	.000	.189+001	.323+002
45.0	302.6	34115.9	37.89	15.00	.517+003	.104-003	.233+005	1121.9	.238+001	.000	.238+001	.430+002
50.0	295.5	34038.4	38.49	15.00	.616+003	.128-003	.232+005	1204.0	.292+001	.000	.292+001	.563+002
55.0	289.0	33920.3	38.37	15.00	.117+004	.154-003	.230+005	1278.6	.348+001	.000	.348+001	.723+002
60.0	283.1	33775.1	38.21	15.00	.163+004	.183-003	.228+005	1350.9	.409+001	.000	.409+001	.912+002
65.0	278.2	33540.5	37.94	15.00	.212+004	.210-003	.225+005	1407.7	.463+001	.000	.463+001	.113+003
70.0	273.8	33265.1	37.63	15.00	.269+004	.233-003	.222+005	1450.1	.507+001	.000	.507+001	.137+003
75.0	270.1	32928.3	37.25	15.00	.328+004	.262-003	.217+005	1495.3	.557+001	.000	.557+001	.164+003
80.0	267.2	32514.5	36.78	15.00	.381+004	.282-003	.212+005	1519.6	.585+001	.000	.585+001	.192+003
85.0	264.7	32067.1	36.28	15.00	.432+004	.300-003	.206+005	1535.6	.604+001	.000	.604+001	.222+003
90.0	263.0	31562.6	35.71	15.00	.469+004	.311-003	.200+005	1538.5	.607+001	.000	.607+001	.252+003
95.0	261.9	31040.6	35.06	15.00	.487+004	.315-003	.193+005	1526.8	.593+001	.000	.593+001	.282+003
100.0	261.3	30506.8	34.38	15.00	.492+004	.314-003	.187+005	1509.3	.573+001	.000	.573+001	.312+003
105.0	260.7	29973.1	33.71	15.00	.496+004	.312-003	.180+005	1487.2	.547+001	.000	.547+001	.340+003
110.0	260.6	29453.8	33.12	15.00	.490+004	.307-003	.174+005	1452.7	.520+001	.000	.520+001	.366+003
115.0	261.0	28963.5	32.61	15.00	.472+004	.298-003	.168+005	1431.5	.487+001	.000	.487+001	.391+003
120.0	261.7	28487.1	32.14	15.00	.452+004	.290-003	.163+005	1404.4	.460+001	.000	.460+001	.415+003
125.0	262.7	28063.2	31.75	15.00	.424+004	.278-003	.158+005	1370.3	.427+001	.000	.427+001	.437+003
130.0	263.9	27663.1	31.29	15.00	.391+004	.264-003	.154+005	1335.2	.395+001	.000	.395+001	.458+003
135.0	265.3	27298.9	30.88	15.00	.357+004	.235-003	.149+005	1269.4	.341+001	.000	.341+001	.476+003
140.0	266.9	25981.4	30.52	15.00	.322+004	.237-003	.146+005	1264.1	.336+001	.000	.336+001	.493+003
145.0	263.6	26686.3	30.19	15.00	.290+004	.223-003	.143+005	1229.2	.310+001	.000	.310+001	.509+003
150.0	270.5	26433.7	29.90	15.00	.258+004	.209-003	.140+005	1193.3	.285+001	.000	.285+001	.524+003
155.0	272.5	26208.9	29.65	15.00	.228+004	.196-003	.138+005	1161.2	.263+001	.000	.263+001	.538+003
160.0	274.6	26002.8	29.42	15.00	.202+004	.183-003	.136+005	1127.9	.242+001	.000	.242+001	.551+003
170.0	279.1	25682.6	29.05	15.00	.154+004	.158-003	.132+005	1059.4	.203+001	.000	.203+001	.573+003
180.0	283.9	25436.6	28.78	15.00	.117+004	.136-003	.130+005	998.2	.172+001	.000	.172+001	.592+003
190.0	289.0	25249.3	28.56	15.00	.871+003	.118-003	.128+005	942.1	.147+001	.000	.147+001	.608+003
200.0	294.4	25119.0	28.42	15.00	.642+003	.101-003	.127+005	886.3	.125+001	.000	.125+001	.621+003
210.0	299.8	25006.2	27.97	15.00	.453+003	.857-004	.126+005	829.8	.105+001	.000	.105+001	.633+003
220.0	305.5	24930.7	27.50	15.00	.315+003	.724-004	.125+005	774.4	.884+000	.000	.884+000	.642+003
230.0	311.3	24874.0	27.06	15.00	.220+003	.612-004	.124+005	721.5	.742+000	.000	.742+000	.651+003
240.0	317.3	24830.9	26.64	15.00	.154+003	.517-004	.124+005	672.9	.627+000	.000	.627+000	.657+003
250.0	323.5	24798.8	26.24	15.00	.107+003	.435-004	.124+005	625.3	.528+000	.000	.528+000	.663+003
260.0	329.7	24773.1	25.97	15.00	.754+002	.367-004	.123+005	578.3	.442+000	.000	.442+000	.668+003
270.0	336.2	24752.3	25.36	15.00	.512+002	.309-004	.123+005	534.8	.373+000	.000	.373+000	.672+003
280.0	342.7	24734.8	24.79	15.00	.352+002	.260-004	.123+005	492.9	.314+000	.000	.314+000	.676+003
290.0	349.4	24720.1	24.24	15.00	.244+002	.221-004	.123+005	455.2	.267+000	.000	.267+000	.678+003
300.0	356.2	24707.6	23.72	15.00	.171+002	.190-004	.123+005	421.4	.230+000	.000	.230+000	.681+003
310.0	363.2	24694.6	22.95	15.00	.120+002	.163-004	.123+005	388.4	.197+000	.000	.197+000	.683+003
320.0	370.2	24683.3	22.07	15.00	.806+001	.138-004	.123+005	353.9	.167+000	.000	.167+000	.685+003
330.0	377.4	24672.6	21.27	15.00	.555+001	.117-004	.123+005	321.1	.142+000	.000	.142+000	.686+003
340.0	384.8	24662.1	20.53	15.00	.390+001	.100-004	.123+005	291.2	.121+000	.000	.121+000	.688+003
350.0	392.2	24651.8	19.86	15.00	.281+001	.866-005	.123+005	264.7	.105+000	.000	.105+000	.689+003
360.0	399.7	24641.6	18.79	15.00	.189+001	.732-005	.123+005	235.0	.888+001	.000	.888+001	.690+003

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BOEING LIFTING PRAKT TRAJ (EXGEO) CONVECTIVE PAYLOAD ENV.

R.P. NO. 50035

TIME SEC	ALT FT	VEL FT/SEC	MACH NO	ANGLE ATTACH	REYNOLDS NO./FT	HEAT COEF LBH/FT-S	RFC ENTHALPY BTU/LBM	PAN FCIL DEG F	CONV RATE BTU/FT-S	RAD RATE BTU/FT-S	TOT RATE BTU/FT-S	HEAT LOAD BTU/FT
4.0	389.0	34172.5	27.92	15.00	.447+001	.939+005	.235+005	410.6	.219+000	.000	.219+000	.000
10.0	373.5	34164.6	30.06	15.00	.941+001	.128+004	.235+005	480.5	.298+000	.000	.298+000	.155+001
16.0	358.9	34194.4	32.57	15.00	.207+002	.183+004	.234+005	567.1	.424+000	.000	.424+000	.372+001
22.0	345.2	34200.7	33.99	15.00	.424+002	.255+004	.234+005	655.7	.590+000	.000	.590+000	.676+001
28.0	332.5	34202.4	35.50	15.00	.681+002	.355+004	.234+005	751.6	.821+000	.000	.821+000	.110+002
34.0	321.1	34189.8	36.37	15.00	.169+003	.565+004	.236+005	853.3	.132+001	.000	.132+001	.174+002
40.0	310.7	34158.5	37.22	15.00	.314+003	.856+004	.234+005	951.9	.151+001	.000	.151+001	.259+002
45.0	302.6	34115.5	37.89	15.00	.517+003	.829+004	.233+005	1035.1	.190+001	.000	.190+001	.344+002
50.0	295.5	34038.4	38.49	15.00	.816+003	.103+003	.232+005	1116.4	.235+001	.000	.235+001	.451+002
55.0	289.0	33920.3	38.37	15.00	.117+004	.123+003	.230+005	1164.0	.278+001	.000	.278+001	.579+002
60.0	283.1	33775.1	38.21	15.00	.163+004	.146+003	.228+005	1251.9	.327+001	.000	.327+001	.730+002
65.0	278.2	33540.5	37.94	15.00	.212+004	.168+003	.225+005	1306.8	.371+001	.000	.371+001	.905+002
70.0	273.8	33265.1	37.63	15.00	.269+004	.186+003	.222+005	1346.0	.405+001	.000	.405+001	.110+003
75.0	270.1	32928.3	37.25	15.00	.328+004	.210+003	.217+005	1390.6	.447+001	.000	.447+001	.131+003
80.0	267.2	32514.5	36.78	15.00	.381+004	.226+003	.212+005	1413.6	.469+001	.000	.469+001	.154+003
85.0	264.7	32067.1	36.28	15.00	.432+004	.240+003	.206+005	1428.0	.484+001	.000	.484+001	.178+003
90.0	263.0	31562.6	35.71	15.00	.469+004	.249+003	.200+005	1431.1	.487+001	.000	.487+001	.202+003
95.0	261.9	31040.6	35.06	15.00	.487+004	.252+003	.193+005	1419.6	.475+001	.000	.475+001	.226+003
100.0	261.3	30506.8	34.38	15.00	.492+004	.251+003	.187+005	1402.7	.458+001	.000	.458+001	.250+003
105.0	260.7	29973.1	33.71	15.00	.496+004	.250+003	.180+005	1382.9	.439+001	.000	.439+001	.272+003
110.0	260.6	29453.8	33.12	15.00	.490+004	.245+003	.174+005	1357.9	.416+001	.000	.416+001	.293+003
115.0	261.0	28963.5	32.61	15.00	.472+004	.238+003	.168+005	1328.8	.390+001	.000	.390+001	.314+003
120.0	261.7	28487.1	32.14	15.00	.452+004	.232+003	.163+005	1303.8	.369+001	.000	.369+001	.332+003
125.0	262.7	28063.0	31.75	15.00	.424+004	.222+003	.158+005	1270.9	.342+001	.000	.342+001	.350+003
130.0	263.9	27663.1	31.29	15.00	.391+004	.212+003	.154+005	1240.0	.318+001	.000	.318+001	.367+003
135.0	265.3	27298.9	30.88	15.00	.357+004	.188+003	.149+005	1176.2	.273+001	.000	.273+001	.382+003
140.0	266.9	26981.4	30.52	15.00	.322+004	.190+003	.146+005	1172.0	.270+001	.000	.270+001	.395+003
145.0	268.8	26686.3	30.19	15.00	.280+004	.178+003	.143+005	1138.5	.249+001	.000	.249+001	.408+003
150.0	270.5	26433.7	29.90	15.00	.258+004	.167+003	.140+005	1103.7	.228+001	.000	.228+001	.420+003
155.0	272.5	26208.9	29.65	15.00	.228+004	.157+003	.138+005	1074.2	.211+001	.000	.211+001	.431+003
160.0	274.6	26002.8	29.42	15.00	.202+004	.146+003	.136+005	1041.3	.193+001	.000	.193+001	.441+003
170.0	279.1	25662.6	29.05	15.00	.154+004	.127+003	.132+005	979.2	.163+001	.000	.163+001	.459+003
180.0	283.9	25436.6	28.78	15.00	.117+004	.109+003	.130+005	920.2	.138+001	.000	.138+001	.474+003
190.0	289.0	25249.3	28.56	15.00	.871+003	.940+004	.126+005	865.1	.117+001	.000	.117+001	.487+003
200.0	294.4	25119.0	28.42	15.00	.642+003	.807+004	.127+005	813.7	.100+001	.000	.100+001	.498+003
210.0	299.8	25008.2	27.97	15.00	.453+003	.686+004	.126+005	760.4	.845+000	.000	.845+000	.507+003
220.0	305.5	24930.7	27.50	15.00	.315+003	.579+004	.125+005	707.7	.708+000	.000	.708+000	.515+003
230.0	311.3	24874.0	27.06	15.00	.220+003	.490+004	.124+005	657.9	.595+000	.000	.595+000	.521+003
240.0	317.3	24830.9	26.64	15.00	.154+003	.417+004	.124+005	611.4	.502+000	.000	.502+000	.527+003
250.0	323.5	24798.8	26.24	15.00	.107+003	.348+004	.124+005	566.7	.423+000	.000	.423+000	.531+003
260.0	329.7	24773.1	25.97	15.00	.754+002	.294+004	.123+005	522.5	.355+000	.000	.355+000	.535+003
270.0	336.2	24752.3	25.36	15.00	.512+002	.247+004	.123+005	480.8	.298+000	.000	.298+000	.538+003
280.0	342.7	24734.8	24.79	15.00	.352+002	.208+004	.123+005	441.4	.251+000	.000	.251+000	.541+003
290.0	349.4	24720.1	24.24	15.00	.244+002	.177+004	.123+005	405.9	.214+000	.000	.214+000	.543+003
300.0	356.2	24707.0	23.72	15.00	.171+002	.152+004	.123+005	373.7	.184+000	.000	.184+000	.545+003
310.0	363.2	24694.8	22.95	15.00	.120+002	.130+004	.123+005	341.0	.157+000	.000	.157+000	.547+003
320.0	370.2	24683.3	22.07	15.00	.806+001	.110+004	.123+005	309.2	.133+000	.000	.133+000	.549+003
330.0	377.4	24672.6	21.27	15.00	.555+001	.926+005	.123+005	278.0	.114+000	.000	.114+000	.550+003
340.0	384.8	24662.1	20.53	15.00	.390+001	.803+005	.123+005	251.2	.094+001	.000	.094+001	.551+003
350.0	392.2	24651.8	19.86	15.00	.281+001	.693+005	.123+005	225.6	.041+001	.000	.041+001	.552+003
360.0	399.7	24641.6	18.79	15.00	.189+001	.545+005	.123+005	197.7	.011+001	.000	.011+001	.553+003

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